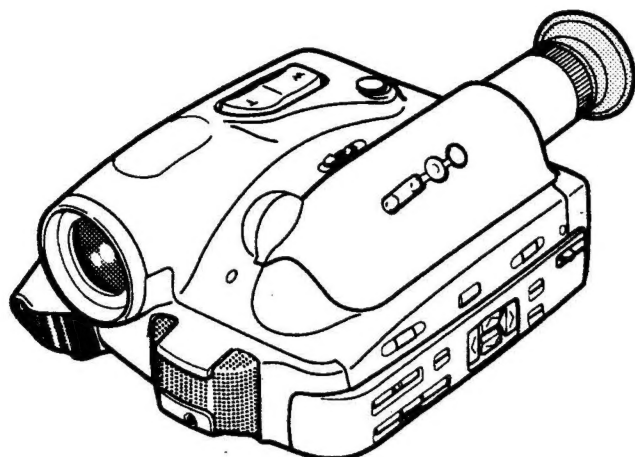


# AKAI SERVICE MANUAL



Intelligent-HQ 8

## VIDEO CAMERA RECORDER

**MODEL PV-M2/F**  
**MODEL PV-M4/F**

## SPECIFICATIONS

<b>PV-M2/F, M4/F</b>		Colour temperature .....	Auto/ 3200 °K/ 4500 °K/ 7200 °K
Video recording system .....	Two rotary heads, helical scanning FM system	Minimum illumination .....	2 lux (F1.8)
Audio recording system .....	Two rotary heads, helical scanning FM system	Recommended illumination .....	More than 100 lux
Video signal .....	PAL colour, CCIR standards	Power source .....	DC 6.0 V
Usable cassette .....	8 mm video format cassette	Power consumption .....	6.5 W including the viewfinder (camera recording)
Recording/playback time		Operating temperature .....	0°C to +40°C
SP mode .....	90 min. with P5-90 cassette	Operating humidity .....	35 % to 80 %
LP mode .....	180 min. with P5-90 cassette	Dimensions .....	Approx. 133 (W) X 84 (H) X 168 (D) mm
Tape speed		Weight	
SP mode .....	Approx. 20.051 mm/sec.	PV-M2 .....	Approx. 660 g (w/o battery)
LP mode .....	Approx. 10.058 mm/sec.	PV-M4 .....	Approx. 670 g (w/o battery)
FF/REW time .....	Approx. 6.5 min. with P5-90 cassette	<b>VA-300EA/EK/EG</b>	
Video		Power requirement .....	AC 110 - 240 V, 50/60 Hz
Line output .....	Phono jack, 1.0 Vp-p / 75 ohms, unbalanced	Power consumption .....	24 W
Audio		Output .....	DC 8.0 V, 1.3 A (charge) DC 6.8 V, 1.8 A (Video camera)
Line output .....	Phono jack, - 7.5 dBs/2.2 kohms, unbalanced	Charging system .....	Constant current, Peak detection, timer controlled
Microphone input .....	Mini jack, - 68 dBs, high impedance, unbalanced with approx. 1.5 V DC output, impedance 6.8 k ohms	Dimensions .....	69 (W) X 41 (H) X 150 (D) mm
Earphone output .....	Mini jack	Weight .....	380 g
Microphone .....	Electret condenser microphone	<b>Standard accessories</b>	
Image sensor .....	1/3" CCD image sensor (320,000 pixels)	Operator's manual .....	1
Lens .....	F/1.8, f = 6.0 - 48 mm 8 times power zoom lens Filter diameter 37 mm	Rechargeable battery (BP-N300) .....	1
Viewfinder .....	Electronic viewfinder with 0.6" (15.2 mm) black/white CRT	DC connection cord .....	1
Auto focus system .....	TTL	Shoulder strap (SB-101) .....	1
Shutter speed .....	1/50 to 1/10000 (8 steps)	Lithium battery (CR2032E) .....	1
Aperture control .....	Automatic	Lithium battery (CR2025E) .....	1 (PV-M4/F only)
		AV cable (VW-300) .....	1 (PV-M2 only)
		AV cable (VW-301) .....	1 (PV-M4 only)
		AV cable (VW-321) .....	1 (PV-M2F only)
		AV cable (VW-322) .....	1 (PV-M4F only)
		Carrying case (VG-C301) .....	1 (PV-M2F, M4F only)
		Cassette tape (P5-60SG) .....	1 (PV-M2F, M4F only)

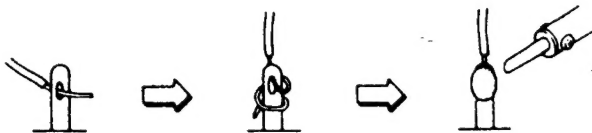
0 dBs = 0.775 V

\* For improvement purposes, specifications and design are subject to change without notice.

# ★ SAFETY INSTRUCTIONS

## PRECAUTIONS DURING SERVICING

1. Parts identified by the ⚠ (\*) symbol are critical for safety. Replace them only with the parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with the specified replacements.  
Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
  - 1) Wires covered with PVC tubing
  - 2) Double insulated wires
  - 3) High voltage leads
4. Use specified insulating materials for hazardous live parts.  
Note especially:
  - 1) Insulation Tape
  - 2) PVC tubing
  - 3) Spacers (insulating barriers)
  - 4) Insulation sheets for transistors
  - 5) Plastic screws for fixing micro switches
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap the ends of the wires securely around the terminals before soldering.



6. Make sure that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not come in contact with sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Make sure that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

## SAFETY CHECK AFTER SERVICING

After servicing, make measurements of the leakage current or resistance in order to determine that exposed parts are acceptably insulated from the supply circuit. The leakage-current measurement should be done between accessible metal parts (such as chassis, ground terminal, microphone jacks, signal input/output connectors, etc.) and the earth ground through a resistor of 1500 ohms paralleled with a 0.15  $\mu$ F capacitor, under the unit's normal working conditions. The leakage-current should be less than 0.5 mA rms AC.

The resistance measurement should be done between accessible exposed metal parts and power cord plug prongs with the power switch (if included) "ON". The resistance should be more than 2.2 Mohms.

## MAKE YOUR CONTRIBUTION TO PROTECT THE ENVIRONMENT

Used batteries with the ISO symbol for recycling as well as small accumulators (rechargeable batteries), mini-batteries (cells) and starter batteries should not be thrown into the garbage can. Please leave them at an appropriate depot.



## PRECAUTIONS FOR LITHIUM BATTERY

The lithium battery may explode if incorrectly replaced. [OBSERVE THE FOLLOWING WHEN REPLACING]

- Replace with the same make and type (or equivalent) recommended by the manufacturer.
- Place the battery in the correct polarity.
- Do not short the terminals.
- Do not recharge the battery.
- Do not dispose of the battery in a fire.

### NOTE:

Do not disconnect or connect any connectors (especially when the FPC cable is connected) while the power is supplied to the unit even if the POWER SWITCH is turned OFF during servicing. It may cause a short circuit and destroy the resistors or semiconductors.



## SAFETY CHECK AFTER SERVICING (VA-300 ONLY)

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

### 1. Insulation resistance test

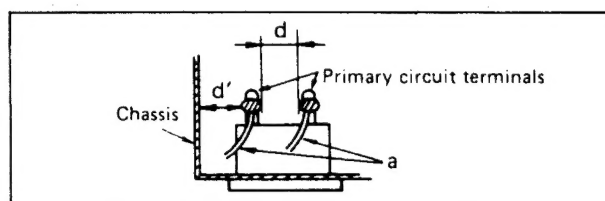
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

### 2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) See table 1 below.

### 3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.



**Table 1 :** Ratings for selected areas

AC Line Voltage	Insulation Resistance	Dielectric Strength	Clearance Distance (d), (d')
100 to 240 V	$\geq 1$ M ohm/500 V DC	1.5 kV 1 minute	$\geq 4$ mm (d') (a : Power cord)

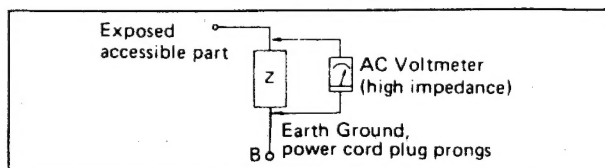
Note : This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

### 4. Leakage current test


Confirm specified or lower leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

#### Measuring Method: (Power ON)

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure and following table 2.



**Table 2 :** Leakage current ratings for selected areas

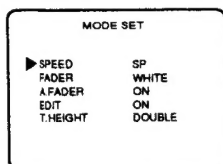
AC Line Voltage	Load Z	Leakage Current (i)	Earth Ground (B) to:
100 to 240V	 50 k ohms	$i \leq 0.7$ m A peak $i \leq 2$ m A dc	Other terminals

Note : This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

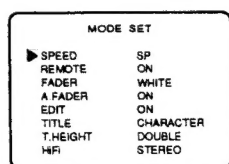
# ★ INFORMATION

## MODE SET menu

The MODE SET menu can be displayed in the viewfinder or on a monitor TV and used to adjust various VIDEO CAMERA modes. The following modes are displayed.



PV-M2



PV-M4

### •SPEED.....SP/LP

Two recording speeds are available.

#### SP (standard play):

To record in the SP mode (approx. 20.051 mm/sec)

#### LP (long play):

To record in the LP mode (approx. 10.058 mm/sec)

### •REMOTE.....ON/OFF (PV-M4 only)

To engage or cancel the remote control function.

### •FADER.....WHITE/BLACK

To set the VIDEO CAMERA for white or black fade in/out.

### •A. FADER....ON/OFF

To engage or cancel the auto fader function.

### •EDIT.....ON/OFF

To display or cancel displays on the TV monitor. This mode can be used to conveniently cancel displays you do not want to record during tape dubbing.

#### OFF:

All displays superimposed in the viewfinder will be displayed on the TV monitor.

#### ON:

Only date/time, title and MODE SET displays will be displayed on the TV monitor. All other displays will appear in the viewfinder only.

### •TITLE.....BANK/CHARACTER (PV-M4 only)

To set the camera for stored bank title selection or character generated title (original title) selection.

### •T. HEIGHT...DOUBLE/NORMAL

To set the stored title height to normal or double size.

### •Hi-Fi.....STEREO/LEFT/RIGHT/L+R (PV-M4 only)

Choose the channel which you wish to monitor when playing back a prerecorded tape which is recorded in stereo or bilingual mode.

#### STEREO:

Choose this setting when playing back a tape recorded in the Hi-Fi stereo sound.

#### LEFT:

Choose this setting when you wish to monitor only the left channel of the Hi-Fi stereo tape or main audio portion of a bilingual tape.

#### RIGHT:

Choose this setting when you wish to monitor only the right channel of the Hi-Fi stereo tape or sub audio portion of a bilingual tape.

#### L+R:

Choose this setting when you wish to monitor the Hi-Fi stereo or bilingual tape in monaural (or main and sub-mixed).

### To set the modes you want:

1. Press the M-SET (MODE SET) button.  
The MODE SET menu will appear in the viewfinder.
2. Select the mode to be set with the  $\wedge$  or  $\vee$  button.
3. Set the mode setting with the  $<$  or  $>$  button.
4. Repeat steps 2 and 3 to set another mode.
5. Press the SET button after all modes have been set.  
The MODE SET menu will disappear.

#### Note:

- The MODE SET menu can be cancelled at anytime during the above operation by pressing the M-SET button.

## TEST MODE

Many kinds of test modes are prepared for the various adjustments on this video camera. In the test mode, a number of the numeral rows appear on the TV screen when the "DISPLAY" button is pressed twice and the data during the adjustment is displayed in hexadecimal numbers in the numeral rows.

Some special characters (marks) are given on respective adjustments and will be displayed on the TV screen during the test mode.

To engage the various test modes, press and hold the assigned buttons shown in the list simultaneously when the power is ON, keep holding the buttons for a few seconds until the test mode number and special character appear on the TV screen.

To cancel the test mode, firmly press the reset button down (the negative battery terminal on the rear) or disconnect the power supply from the unit (in this case, the lithium battery for back up must be removed first.).

To engage various test modes.

TEST MODE No.	BUTTONS PRESSED	PURPOSE	SYMBOL
TEST MODE 02	^ & >	TAPE transport ADJ	OCTOPUS
TEST MODE 04	v & <	VIDEO circuit check	KANGAROO
TEST MODE 81	REC & DATE/TIME	CAMERA general ADJ.	SQUID
TEST MODE 82	COUNTER RESET & DATE/TIME	CAMERA lens ADJ.	OCTOPUS
TEST MODE 11	BACK LIGHT & WHITE BALANCE	VTR section final ADJ.	SQUID
TEST MODE 12	FULL AUTO & SHUTTER	CAMERA's function check	OCTOPUS

The function of TEST MODE 02

BUTTON	FUNCTION
-	The reel rotation sensor and the drum motor stop circuit do not operate in TEST MODE 02.
< or >	To change the ATF off-set bias during playback.
COUNTER RESET	To adjust the video switching point automatically.

The function of TEST MODE 04

BUTTON	FUNCTION
COUNTER RESET	To switch the Y/C separation IR adjusting mode ON/OFF.
<	To change the NOISE CANCEL level.
>	To change the Y comb filter level.

#### The function of TEST MODE 11

BUTTON	FUNCTION
REC	When playing back an SP pre-recorded tape, adjust the switching point automatically and the data will be memorized in the EEP ROM IC.
>	Set the ATF bias level to +1.
<	Set the ATF bias level to -1.
^	Set the ATF bias level at maximum.
v	Set the ATF bias level at minimum.
PLAY	Set the ATF bias level to the center.
SHUTTER	To memorize the present ATF bias level to the EEP ROM IC and set it as the center value.
I-HQ	To switch the I-HQ ON / OFF.
SET	To memorize the present I-HQ data to the EEP ROM IC.
WHITE BALANCE	To move the switching pulse to the PCM zone.
STILL	To change the tape speed during recording.
FADER	To select the normal or faded picture (white or black).
^ & v	To set the IMS characters to English.
> & <	To set the IMS characters to French.

#### The function of TEST MODE 12

BUTTON	FUNCTION
SHUTTER	Shutter speed changes from 1/50 to 1/10000 and back to 1/50 automatically (in 8 steps).
WHITE BALANCE	White balance changes in one complete cycle automatically.

#### IMPORTANT:

1. Auto focus tracking adjustment is absolutely necessary in the following conditions. Refer to step 5-3-2 on page 49.
  - 1) The LENS BLOCK or ZOOM ENCODER PCB (on the LENS BLOCK) is replaced.
  - 2) The CCD element or CAMERA (1) PCB is replaced.
  - 3) The EEP-ROM IC (IC310), micro processing IC (IC309) or OPE-AMP IC (IC304 or 305) in the CAMERA (1) PCB is replaced.
2. I-HQ ENVE DET PRESET adjustment is necessary to maintain proper performance in the following conditions. Refer to step 5-4-3 on page 52.
  - 1) EEP-ROM IC (IC310), micro processing IC (IC309) in the CAMERA (1) PCB is replaced or CAMERA (1) PCB is replaced.
  - 2) HEAD DRUM BLOCK is replaced.
  - 3) PRE AMP PCB is replaced.
3. If the HEAD DRUM BLOCK is replaced, the following adjustments are necessary to maintain proper performance. Make sure to demagnetize the rotary heads before proceeding.
  - 1) PB switching point adjustment. (Electrical adj. 5-4-1)
  - 2) ATF tracking adjustment. (Electrical adj. 5-4-2)
  - 3) I-HQ ENVE DET PRESET adjustment. (Electrical adj. 5-4-3)
  - 4) A/V head REC current adjustment. (Electrical adj. 5-2-1, step 6 & 5-2-2, step 5, 6)

# I. DISASSEMBLY

In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the illustrations. Reassemble in the reverse order.

## 1-1. Removal of the UPPER CASE BLOCK

1. Remove the two (A) screws which retain the right side of the UPPER CASE BLOCK.
2. Remove the (B) screw and remove the LENS HOOD.  
(If there is no hole on the lens decoration plate, peel off the lens decoration plate then remove the (B) screw.)

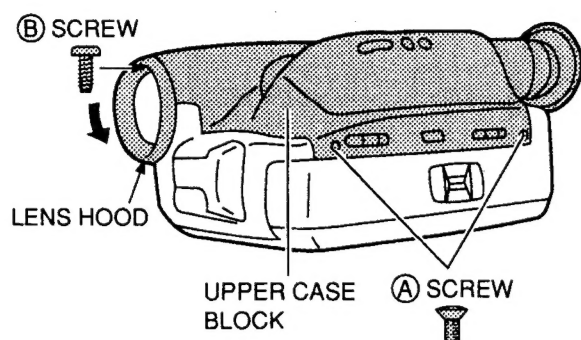


Fig.1-1

3. Remove the (C) screw and (D) screw which retain the left side of the UPPER CASE BLOCK.

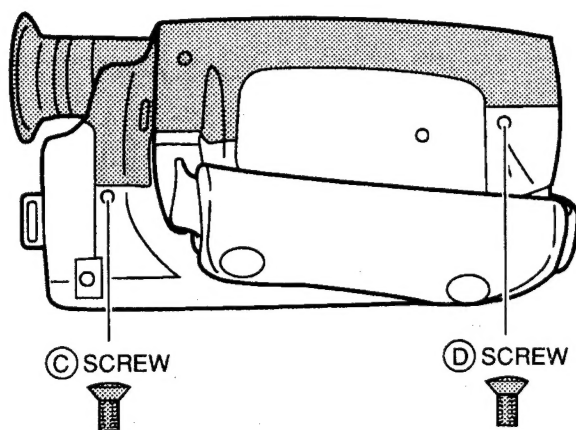


Fig.1-2

4. Remove the REMOTE CONTROL UNIT if it is mounted (PV-M4 only) and remove the (E) screw which retains the upper side of the UPPER CASE BLOCK.

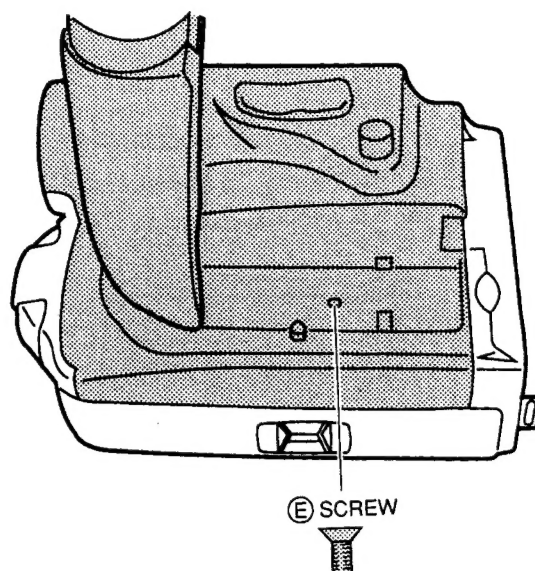


Fig.1-3

## 1-2. Removal of the BOTTOM CASE BLOCK

1. Remove the three (A) screws and remove the STAND HOLDER.

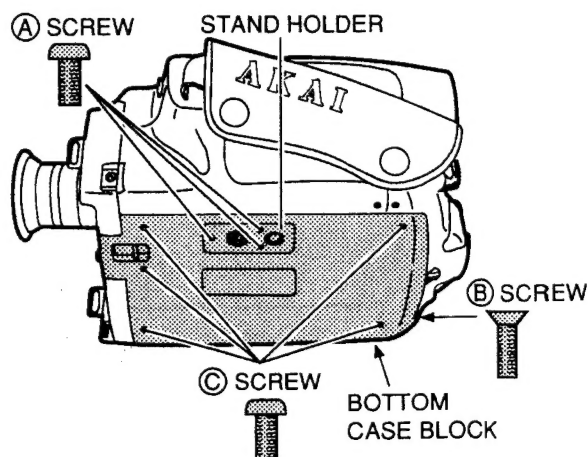


Fig.1-4

2. Remove the (B) screw and five (C) screws as shown in Fig.1-4 then remove the BOTTOM CASE BLOCK.



### 1-3. Removal of the BATTERY HOLDER CASE

1. Remove the four (A) screws which retain the BATTERY HOLDER CASE and remove it.

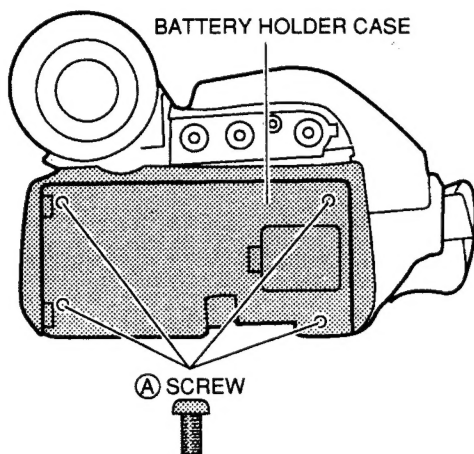


Fig.1-5

### 1-4. Removal of the GRIP CASE BLOCK

1. Remove the (A) screw and two (B) screws then remove the GRIP CASE BLOCK.

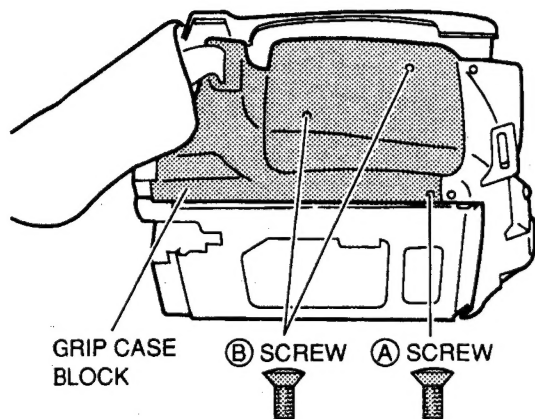


Fig.1-6

### 1-5. Removal of the MIC BLOCK

1. If it is necessary to detach the UPPER CASE BLOCK completely, unlock the stoppers of the P17 and P711 connectors by pulling them in the direction of the arrow then disconnect both the FPC (Flexible Printed Circuit) cables. And then disconnect the P13 connector to detach the UPPER CASE BLOCK.

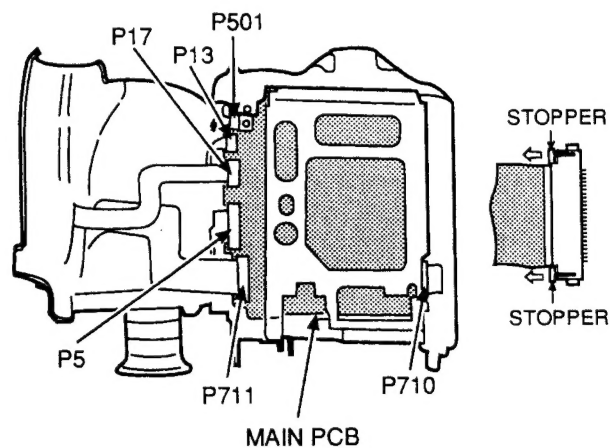


Fig.1-7

2. Disconnect the P501 connector as shown in Fig.1-7
3. Remove the (A) and (B) screws which retain the MIC BLOCK as shown in Fig.1-8.

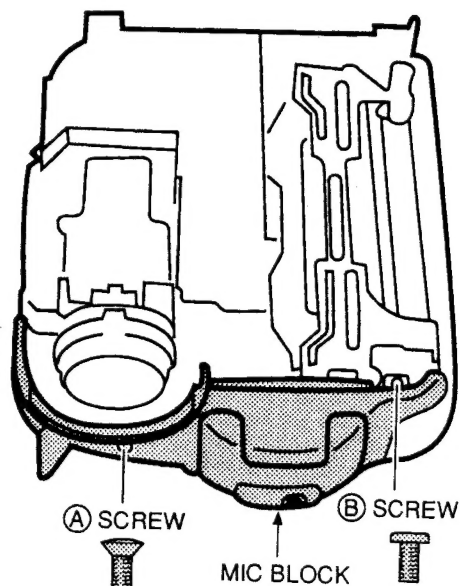


Fig.1-8

## 1-6. Removal of the OPERATION A BLOCK

1. Unlock the stopper of the P710 connector as shown in Fig.1-7 and disconnect the FPC cable.
2. Remove the (A) and (B) screws which retain the OPERATION A BLOCK and remove it.

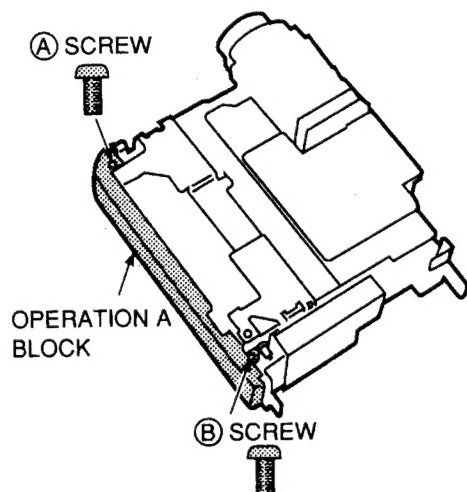


Fig.1-9

## 1-7. Disassembling the UPPER CASE BLOCK

### 1-7-1. Removal of the VIEWFINDER BLOCK

1. Disconnect the P119 connector on the CONNECTOR PCB.

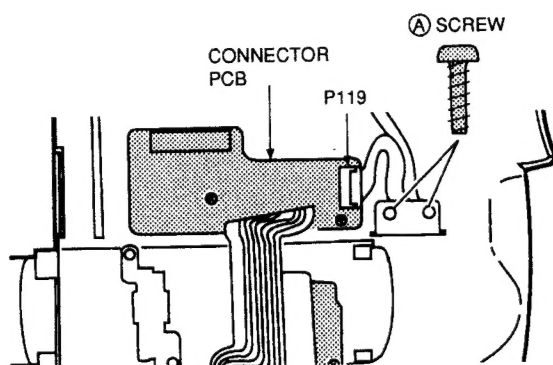


Fig.1-10

2. Remove the two (A) screws which retain the VIEWFINDER BLOCK.

### 1-7-2. Removal of the CONNECTOR PCB

1. Disconnect the P119 connector on the CONNECTOR PCB.
2. Remove the two (A) screws on the OPERATION H (M4) BLOCK (PV-M4) and (B) screw on the REMO-CON PIN PCB as shown in Fig.1-11.

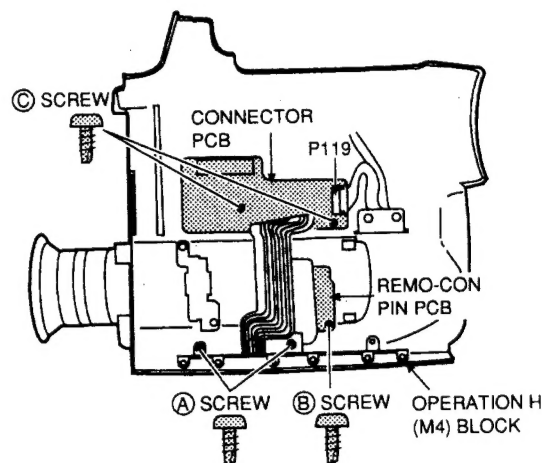


Fig.1-11 (PV-M4)

Remove the two (A) screws and three (B) screws which retain the OPERATION H (M2) BLOCK (PV-M2) as shown in Fig.1-12.

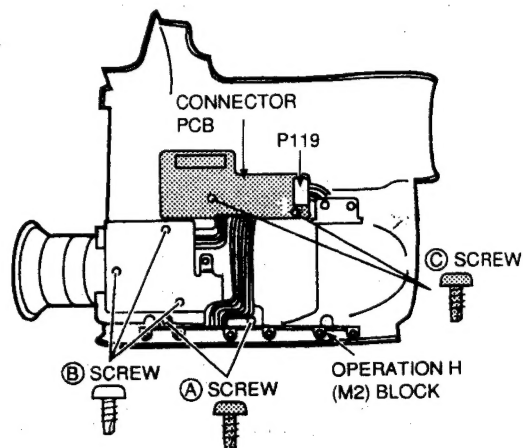


Fig.1-12 (PV-M2)

3. Remove the two ③ screws on the CONNECTOR PCB as shown in Fig.1-11 (or Fig.1-12) then remove the three ④ screws and ⑤ screw on the OPERATION TW BLOCK as shown in Fig.1-13

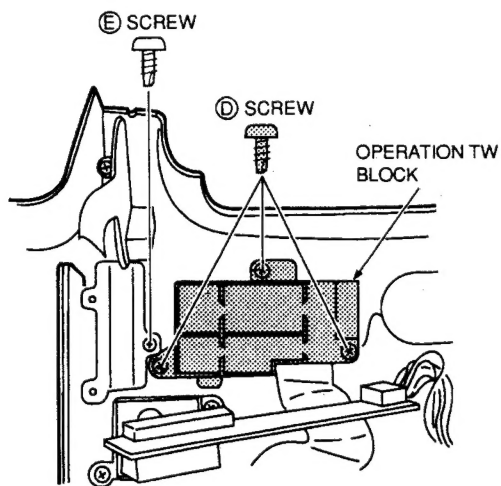


Fig.1-13

3. Peel off the decoration plate on the AV OUT JACK then remove the two ⑥ screws and remove the AV JACK.

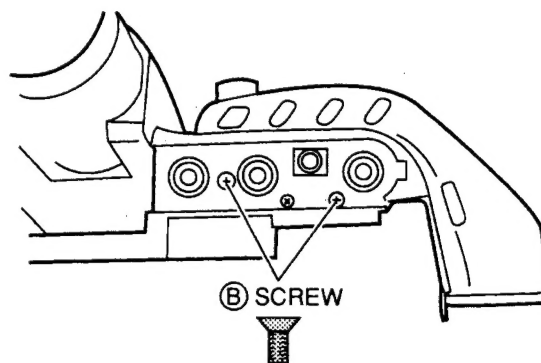


Fig.1-15

4. Remove the CONNECTOR PCB (with the OPERATION H BLOCK, OPERATION TW BLOCK and REMOCON PIN PCB attached) very carefully so as not to damage the FPC cables.

4. Remove the two ③ screws which retain the REC SWITCH PCB as shown in Fig.1-14 then remove the AV JACK BLOCK carefully.

### 1-7-3. Removal of the AV JACK BLOCK

1. Remove the CONNECTOR PCB (refer to 1-7-2).
2. Remove the two ① screws and remove the REMOTE SENSOR BLOCK (PV-M4 only).

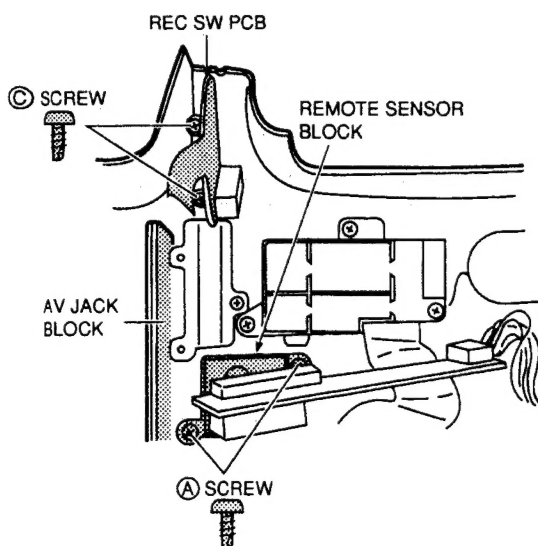


Fig.1-14

## II. PRINCIPAL PARTS LOCATION

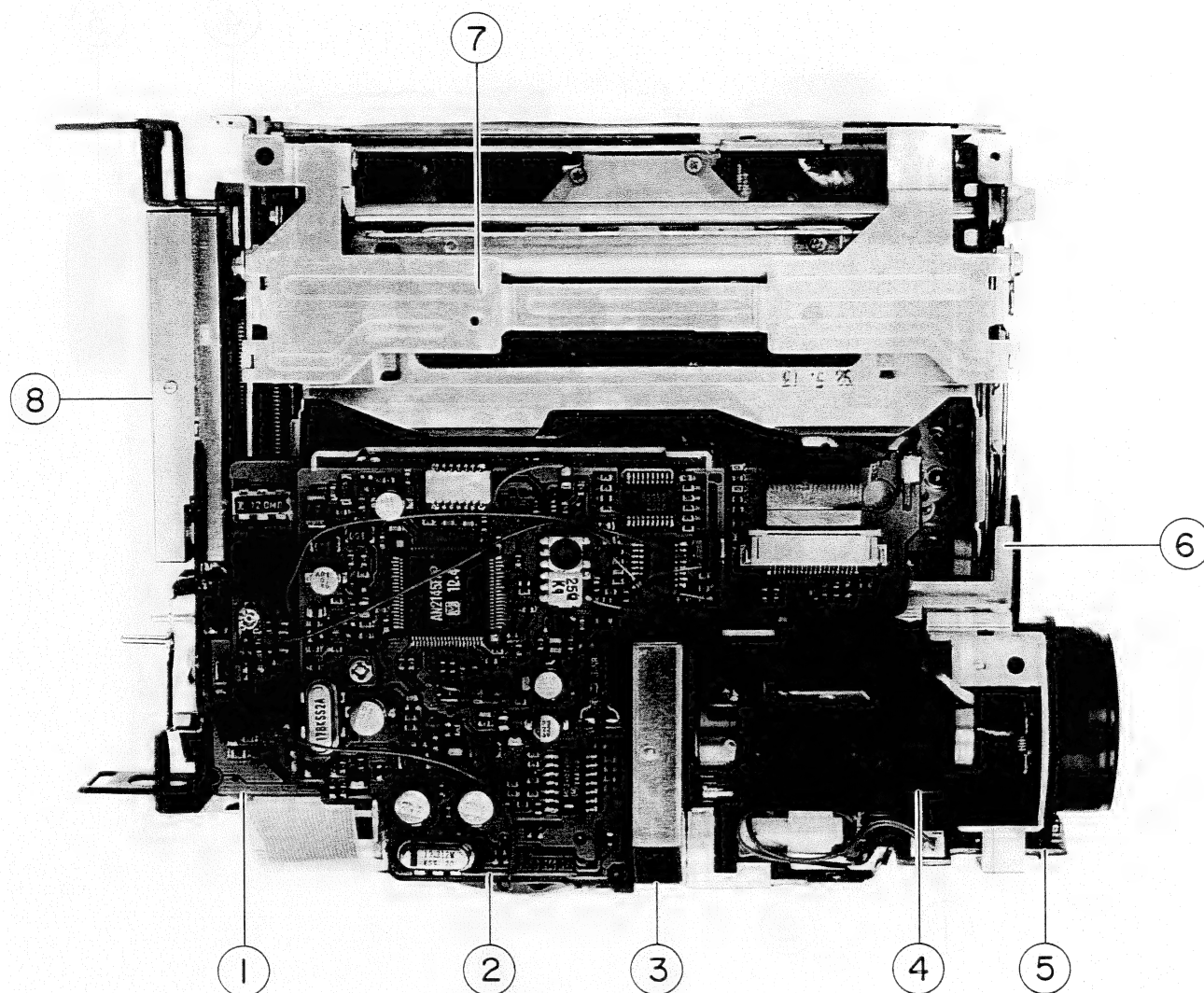


Fig. 2-1 Top view

- 1. CAMERA (1) PCB
- 2. CAMERA (2) PCB
- 3. CCD PCB
- 4. LENS BLOCK

- 5. ZOOM ENCODER PCB
- 6. LENS HOLDER (2) PART
- 7. LENS HOLDER (3) PART
- 8. POWER SUPPLY PCB

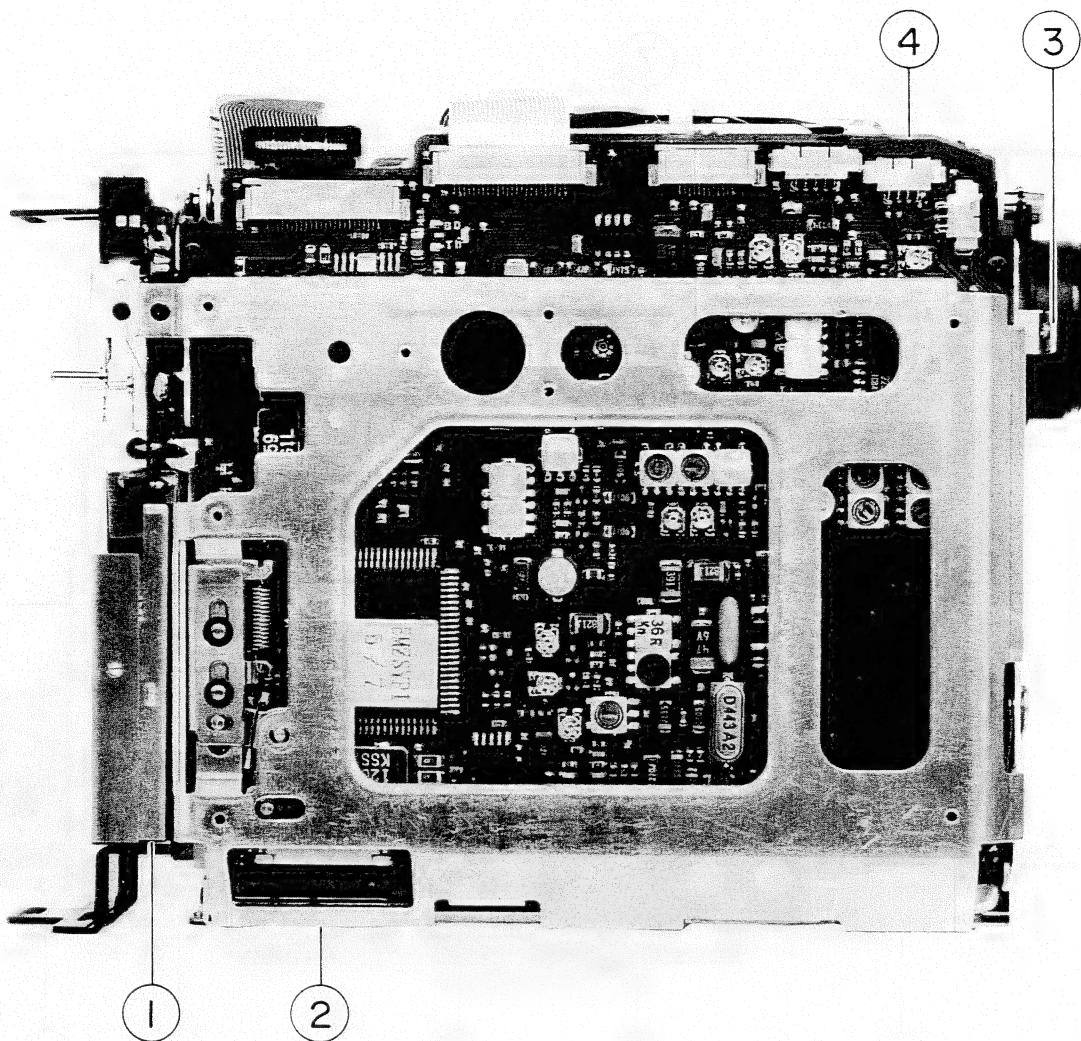


Fig. 2-2 Bottom view

- 1. POWER SUPPLY PCB
- 2. MECHA. COVER

- 3. LENS HOLDER (1) PART
- 4. MAIN PCB



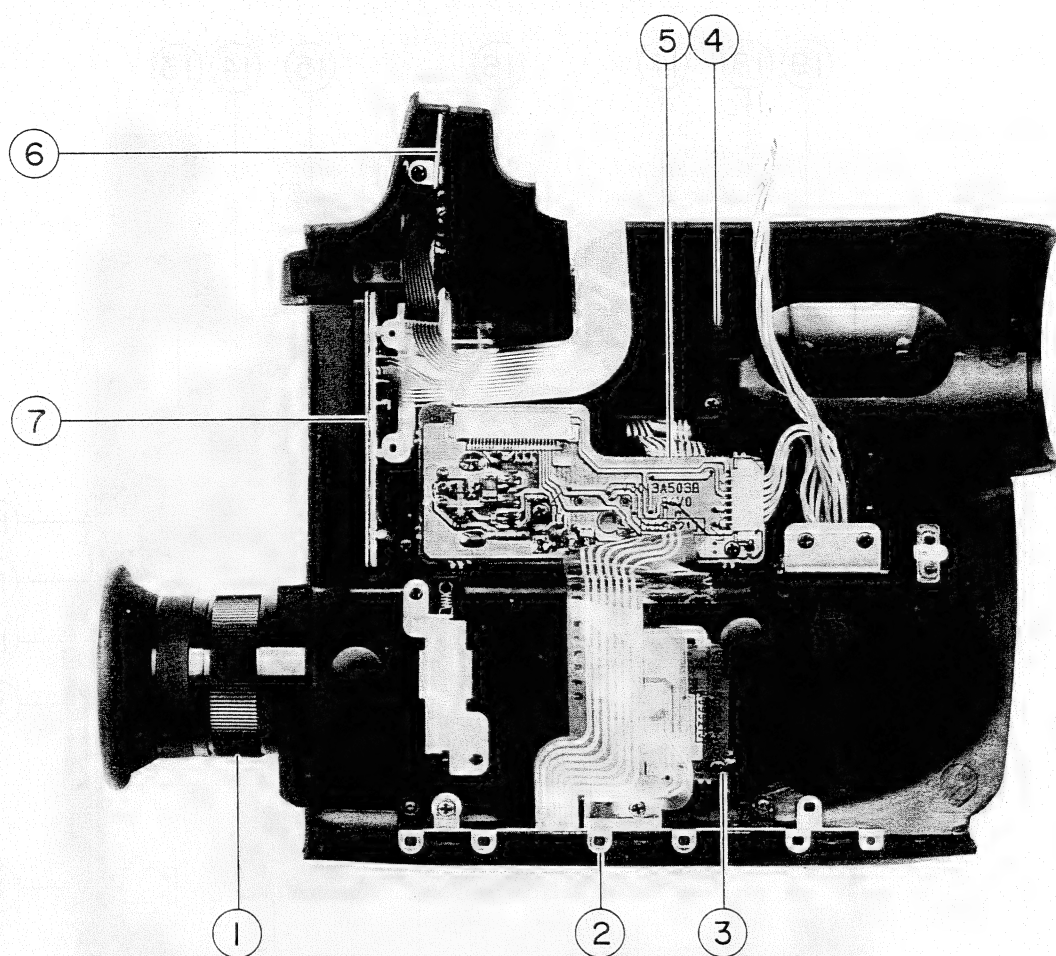


Fig. 2-3 UPPER CASE BLOCK (PV-M4)

1. VIEWFINDER BLOCK
2. OPERATION H BLOCK
3. REMO-CON PIN PCB
4. OPERATION TW BLOCK

5. CONNECTOR PCB
6. A/V JACK BLOCK 1/2 (REC SWITCH & PHONE JACK)
7. A/V JACK BLOCK 2/2 (A/V OUT JACK)

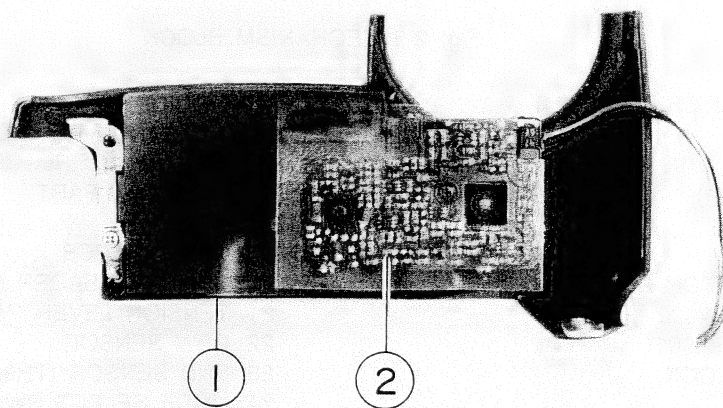


Fig. 2-4 MIC BLOCK

1. MIC PART

2. MIC AMP PCB

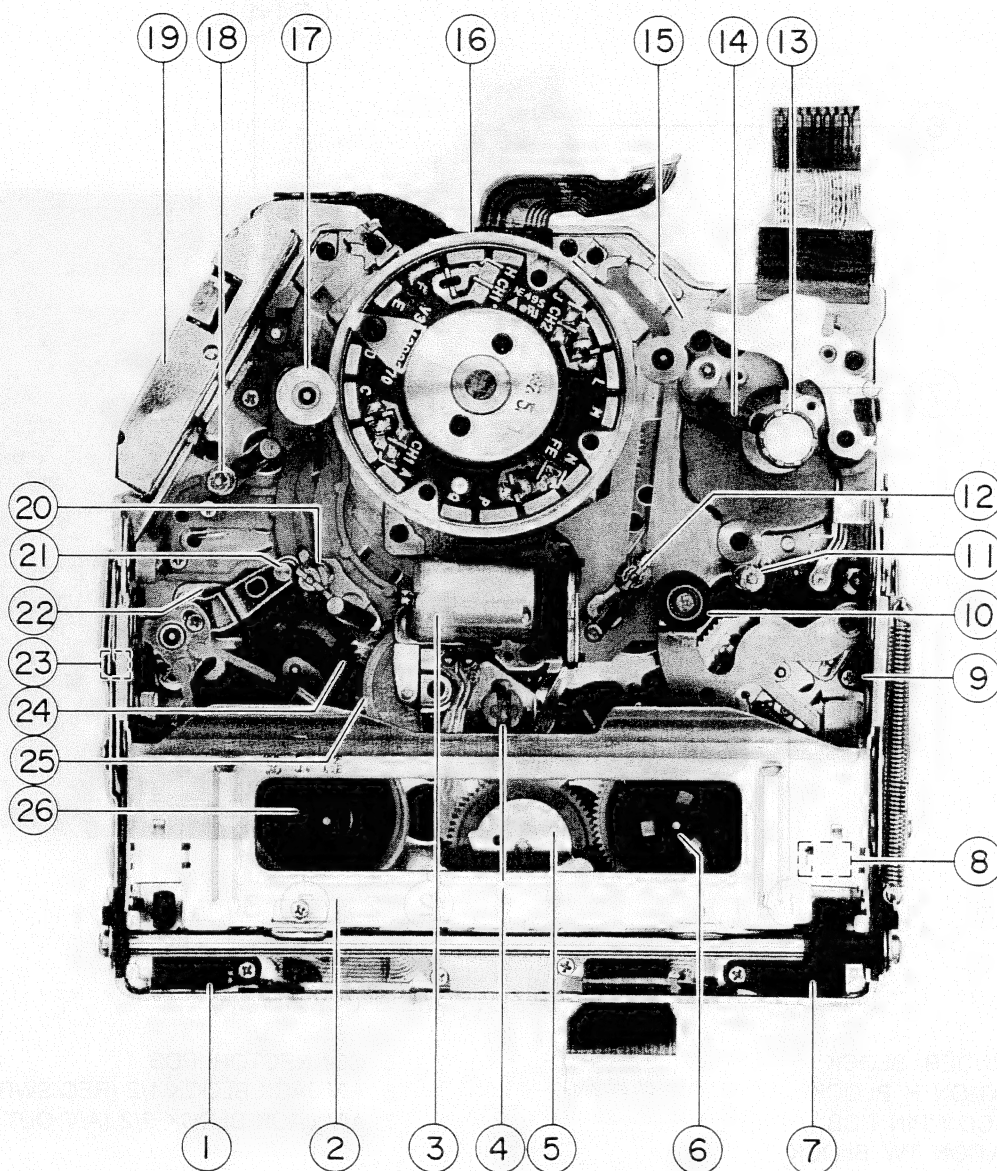


Fig. 2-5 MECHANISM BLOCK

- |                                 |                             |
|---------------------------------|-----------------------------|
| 1. TAPE DETECT SWITCH 1 (SW904) | 14. TAPE GUIDE              |
| 2. EJECTOR BLOCK                | 15. HEAD CLEANER BLOCK      |
| 3. LOADING MOTOR (M901)         | 16. HEAD DRUM BLOCK         |
| 4. SENSOR LED (D901)            | 17. Z ROLLER PART           |
| 5. IDLER PART                   | 18. GUIDE (1)               |
| 6. (T) REEL PART                | 19. PRE AMP PCB             |
| 7. TAPE DETECT SWITCH 2 (SW901) | 20. LOADING LEADER (S) PART |
| 8. EJECT SWITCH (SW902)         | 21. TENSION LEVER PART      |
| 9. START SENSOR (TR901)         | 22. DEW SENSOR              |
| 10. PINCH ROLLER BLOCK          | 23. END SENSOR (TR902)      |
| 11. REVIEW ARM                  | 24. MODE SELECT SWITCH      |
| 12. LOADING LEADER (T) PART     | 25. CENTER CAM GEAR         |
| 13. CAPSTAN MOTOR               | 26. (S) REEL PART           |

# III. MAIN COMPONENTS REPLACEMENT

**Note:** When disassembling the MECHA. BLOCK, the LOADING MECHANISM must firstly be set to the eject position. Press the EJECT button before disassembling the unit.

## 3-1. Removal of the POWER SUPPLY PCB

1. Remove the two ① screws which retain the POWER SUPPLY PCB as shown in Fig. 3-1.

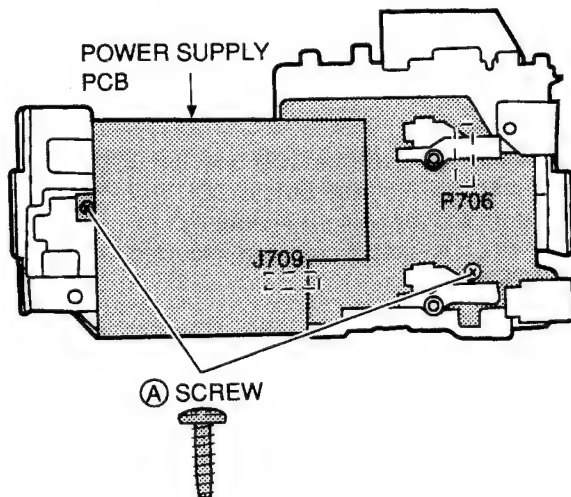


Fig. 3-1

2. While holding the CHASSIS and POWER SUPPLY PCB, squeeze the POWER SUPPLY PCB gently and pull it forwards to detach the J709 connector from the P309 connector on the MAIN PCB.
3. To remove the POWER SUPPLY PCB from the MECHANISM BLOCK, disconnect the P706 connector on the POWER SUPPLY PCB which comes from the CAMERA BLOCK.

## 3-2. Removal of the CAMERA BLOCK

### 3-2-1. Removal of the CAMERA BLOCK

1. Remove the POWER SUPPLY PCB (refer to step 3-1).
2. Unlock the stopper of the P5 connector on the MAIN PCB located on the bottom and disconnect the FPC cable as shown in Fig.1-7.
3. Remove the ① screw on the rear of the chassis.

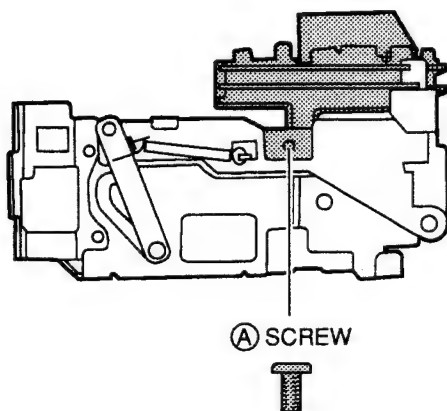


Fig. 3-2

4. Remove the ② screw on the LENS BLOCK left side and the ③ screw on the front of the chassis then remove the CAMERA BLOCK.

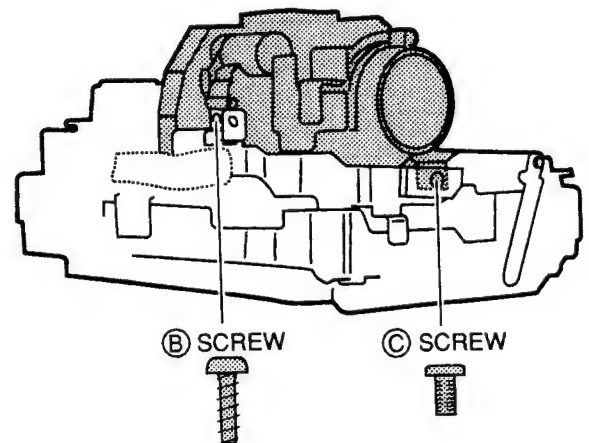


Fig. 3-3

### 3-2-2. Removal of the LENS BLOCK

1. Unlock the stopper of the P304 connector on the CAMERA (1) PCB and disconnect the LENS BLOCK's FPC cable.

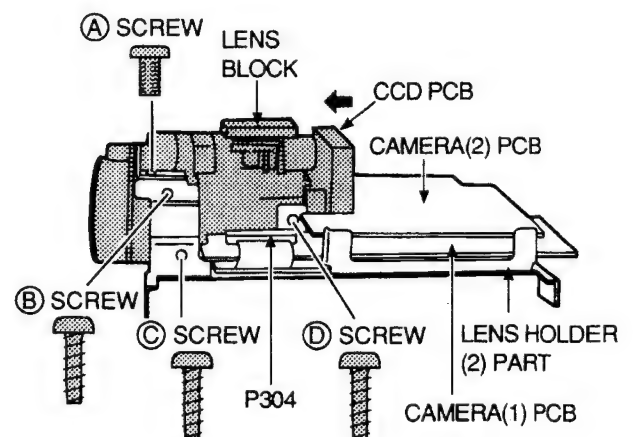


Fig. 3-4

2. Remove the LENS BLOCK retaining ①, ②, ③ and ④ screws as shown in Fig.3-4 and while holding the CAMERA (2) PCB with your right hand, squeeze and pull the CCD PCB shield cover in the direction of the arrow very carefully with your left hand to detach the LENS BLOCK (with CCD PCB attached) from the CAMERA (2) PCB.
3. In case you are removing the CAMERA (1) PCB and CAMERA (2) PCB from the LENS HOLDER (2) part, take care not to scratch any of the chips mounted on the PCB by the chassis's PCB holders (grooves on the chassis).
4. Reassemble in the reverse order for installation.

### 3-2-3. Removal of the CCD PCB.

1. Remove the two (A) CCD PCB retaining screws and detach the CCD PCB carefully.

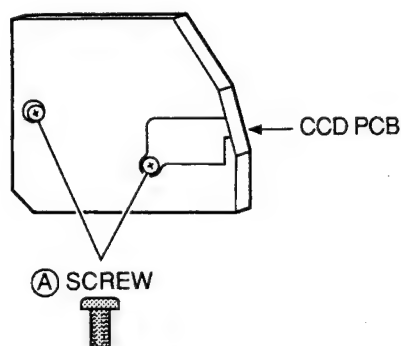


Fig. 3-5

2. When re-attaching the CCD PCB to the LENS BLOCK, take care not to damage or bend the CCD's leads.

### 3-2-4. Removal of the CCD

1. Remove the two (A) screws which retain the CCD PLATE.

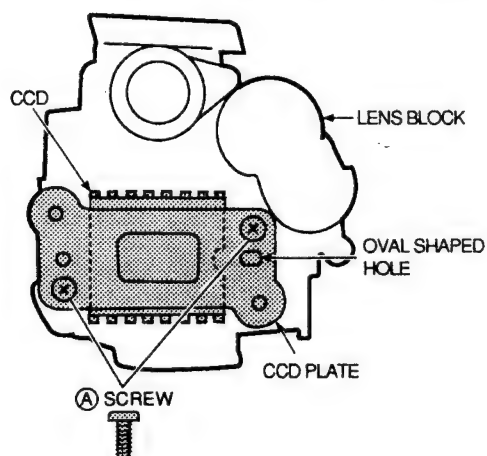


Fig. 3-6

2. If the X'TAL FILTER comes out of the LENS BLOCK or it has to be replaced for some reason, take care of the direction when installing it.

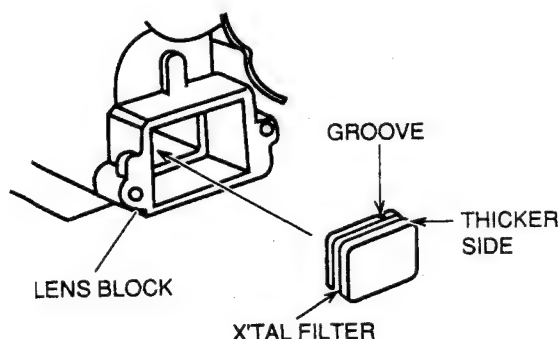


Fig. 3-7

3. When reassembling, very carefully clean the surface of the X'TAL FILTER (if it is removed from the LENS BLOCK) and CCD element (on the CCD PLATE) before installation. (We recommend using lens cleaning paper or a lens cleaning cloth). After confirmation that there is no dust, dirt or any finger prints on the surface of the CCD (and the X'TAL FILTER), attach the RUBBER SEAL on the CCD.
4. Place the CCD plate (with the rubber seal attached) on the LENS BLOCK, the oval shaped hole (CCD's groove side) on the CCD PLATE must be the right side as shown in Fig. 3-6. Then tighten the two retaining screws.

#### Note 1:

Do not try to detach the CCD from the CCD PLATE, as it is precisely mounted on the CCD PLATE, with glue, at the factory by using a special jig. The CCD is always supplied mounted on the CCD PLATE.

#### Note 2:

Once the CCD plate is replaced or removed from the LENS BLOCK, auto focus tracking adjustment must be performed. Refer to the 5-3-2, "AUTO FOCUS TRACKING ADJUSTMENT" on page 49.

### 3-3. Removal of the MECHA. BLOCK

#### 3-3-1. Removal of the MECHA. COVER PART

1. Remove the POWER PCB and CAMERA BLOCK (refer to 3-1 and 3-2).
2. Remove the (A), (B) and three (C) screws as shown in Fig. 3-8.

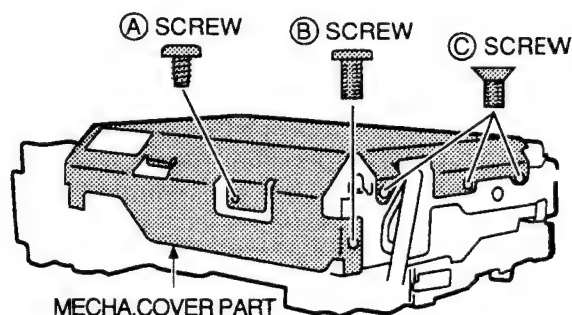


Fig. 3-8



3. Remove the three ④ screws then remove the MECHA. COVER PART.

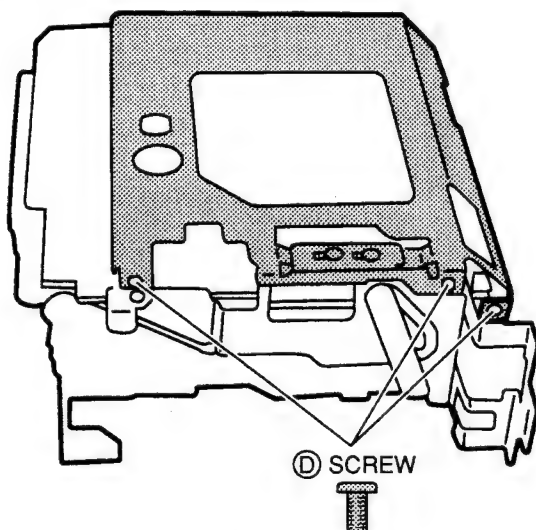


Fig. 3-9

### 3-3-2. Removal of the MAIN PCB

1. Remove the MECHA. COVER PART (refer to 3-3-1).
2. Unlock the stopper of the P312 connector and disconnect the MECHANISM SENSOR's FPC cable.

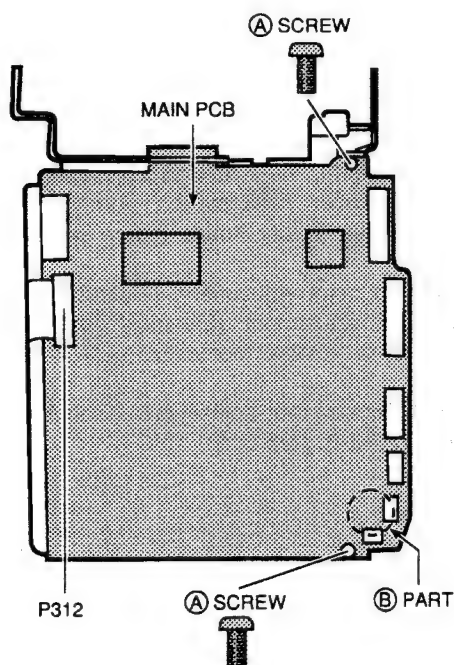


Fig. 3-10

3. Remove the two ③ screws and lift up the ② part to disconnect the connector between the PRE AMP PCB and MAIN PCB as shown in Fig. 3-10.
4. Turn over the MAIN PCB taking care not damage to the other FPC cables.  
Unlock the stoppers of the P307 and P308 connectors then disconnect both the DRUM MOTOR and CAPSTAN MOTOR FPC cables.

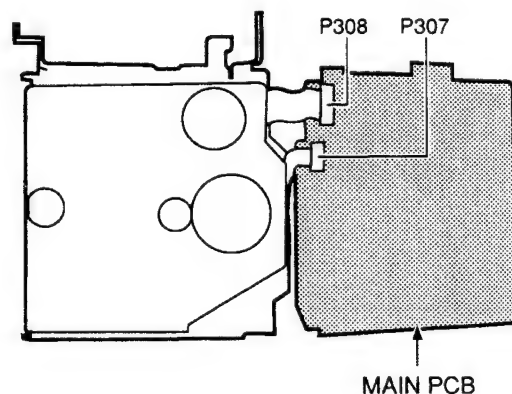


Fig. 3-11

### 3-3-3. Removal of the CAMERA HOLDER BLOCK

1. Remove the MAIN PCB (refer to 3-3-2).
2. Remove the two ③ screws and remove the CAMERA HOLDER BLOCK (LENS HOLDER (1) PART and LENS HOLDER (3) PART).

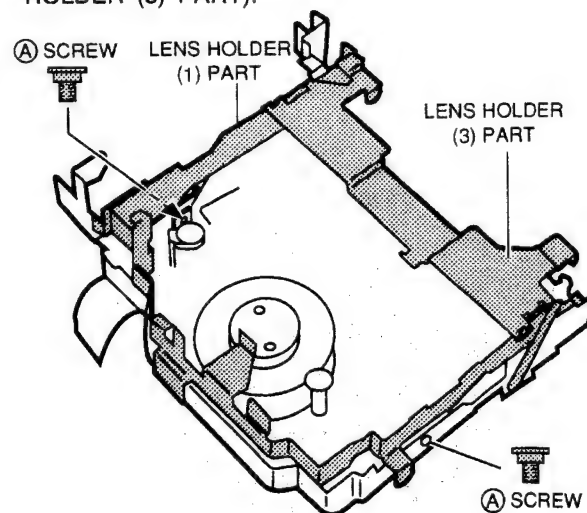


Fig. 3-12



### 3-3-4. Removal of the PRE AMP PCB

1. Unlock the stopper of the P916 connector on the PRE AMP PCB and disconnect the FPC cable which comes from the LOWER DRUM BLOCK.
2. Remove the (A) screw and remove the PRE AMP PCB.

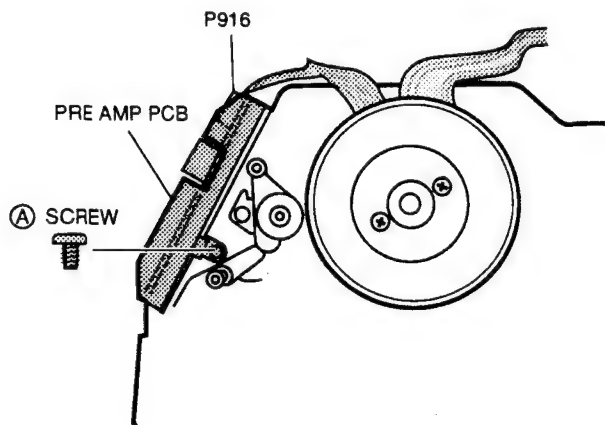


Fig. 3-13

### 3-4. Disassembling the MECHA. BLOCK

#### Note:

- It is necessary to remove the POWER SUPPLY PCB, CAMERA BLOCK, CAMERA HOLDER BLOCK, PRE AMP PCB and the MECHA. COVER PART in most cases before proceeding.
- Set the loading mechanism to the "reference position" supplying DC 4.5 V to the LOADING MOTOR before proceeding.

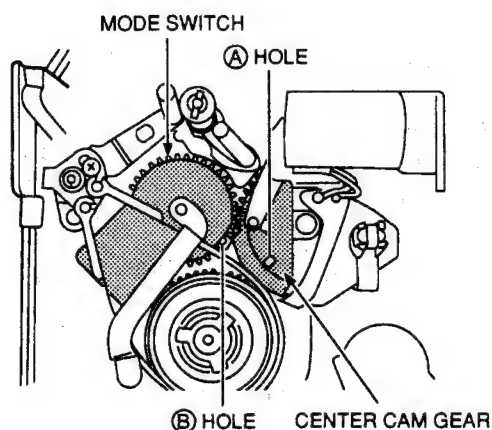


Fig. 3-14

At the reference position, the CENTER CAM GEAR's (A) hole must be aligned with its reference hole on the chassis and the MODE SWITCH's (B) hole must be aligned with its reference hole on the chassis and hole on the SLIDER PLATE.

### 3-4-1. Removal of the HEAD DRUM BLOCK

1. Remove the three (A) screws as shown in Fig. 3-15.

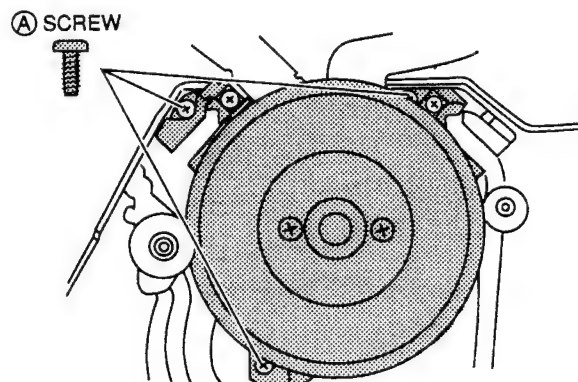


Fig. 3-15

2. When reattaching the HEAD DRUM BLOCK, taking care not to damage the FPC cables

#### Note:

1. When replacing the HEAD DRUM BLOCK, handle it with special care to avoid any scratching on the upper and lower head drums, or damaging the rotary head tips.
2. After replacement, the following adjustments are necessary for proper performance. And make sure to demagnetize the rotary heads before proceeding.
  - 1) PB switching point adjustment. (Electrical adj. 5-4-1)
  - 2) ATF tracking adjustment. (Electrical adj. 5-4-2)
  - 3) I-HQ reference voltage memorization. (Electrical adj. 5-4-3)
  - 4) A/V head REC current adjustment. (Electrical adj. 5-2-1, step 6 & 5-2-2, step 5, 6)

### 3-4-2. Removal of the DRUM MOTOR PCB

1. Remove the HEAD DRUM BLOCK (refer to step 3-4-1).
2. Remove the (A) screw and remove the EARTH BRUSH as shown in Fig. 3-16.

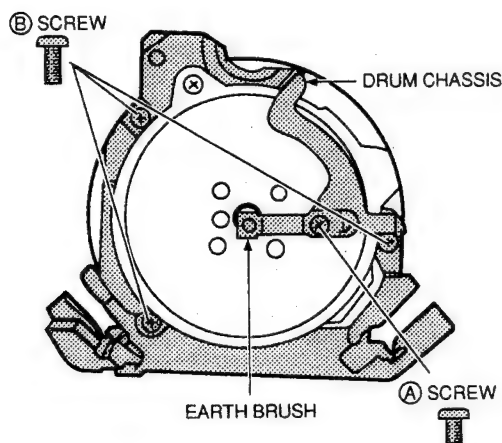


Fig. 3-16

3. Remove the three (B) screws and remove the DRUM CHASSIS carefully as shown in Fig. 3-16.
4. Remove the four (C) screws on the MOTOR HOLDER as shown in Fig. 3-17.

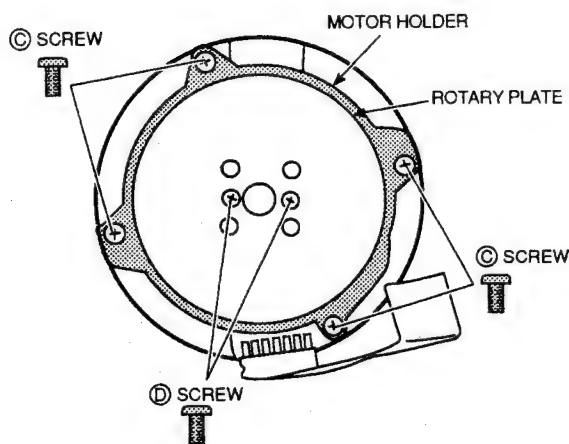


Fig. 3-17

5. Remove the two (D) screws which retain the ROTARY PLATE and remove the ROTARY PLATE. As the power of the magnet on the ROTARY PLATE is very strong and the DRUM MOTOR PCB is sandwiched between the ROTARY PLATE and DRUM PLATE, take care not to damage the DRUM MOTOR PCB when removing the ROTARY PLATE. First removing the ROTARY PLATE with DRUM MOTOR PCB and DRUM PLATE attached from the COLLAR PRELOAD is recommended. Then hold the ROTARY PLATE and remove the DRUM PLATE very carefully.

6. Reassemble in the reverse order for installation. When reattaching the ROTARY PLATE, the (A) hole on the COLLAR PRELOAD must be aligned with the (B) hole on the ROTARY PLATE as shown in Fig. 3-18.

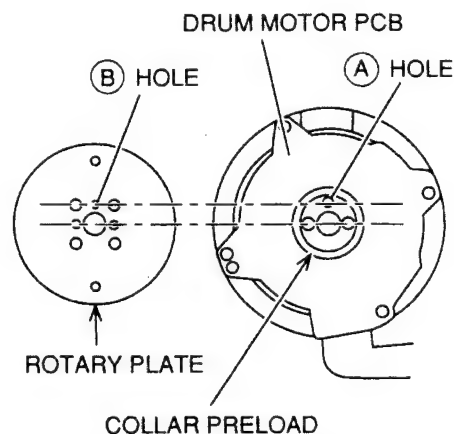


Fig. 3-18

#### Note:

After replacement, the following adjustments are necessary for proper performance.

- 1) PB switching point adjustment. (Electrical adj. 5-4-1)
- 2) ATF tracking adjustment. (Electrical adj. 5-4-2)

### 3-4-3. Removal of the EJECTOR BLOCK

1. Remove the slit washers on both the left and right sides of the MECHA. BLOCK as shown in Fig. 3-19.

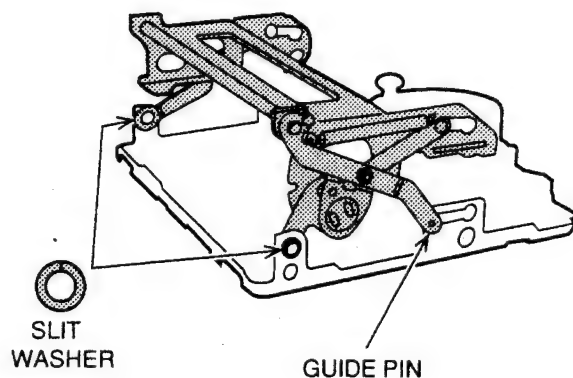


Fig. 3-19

2. Extract the individual guide pins from the respective guide holes on the chassis taking care not to damage them.
3. Reassemble in the reverse order for installation.

### 3-4-4. Removal of the HEAD CLEANER BLOCK and TAPE GUIDE HOLDER

1. Remove the EJECTOR BLOCK (refer to 3-4-3).
2. Unhook the cleaner arm spring then release the stopper of the CLEANER ARM BLOCK as shown in Fig. 3-20 and remove it.

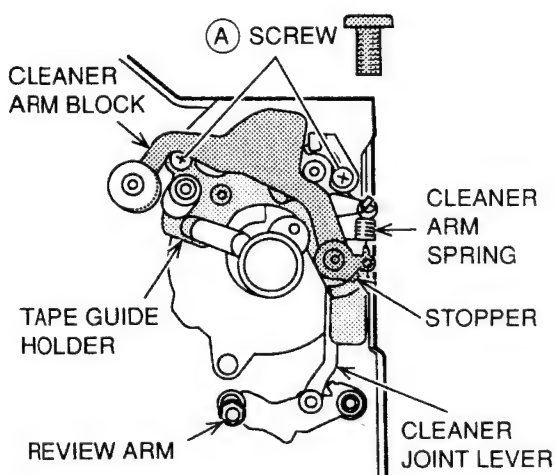


Fig. 3-20

3. Remove the two (A) screws then remove the TAPE GUIDE HOLDER PART.
4. After replacement, reassemble in the reverse order for installation. When reattaching the TAPE GUIDE HOLDER, insert the pin of the CLEANER JOINT LEVER into the hole on the REVIEW ARM.

### 3-4-5. Removal of the CAPSTAN MOTOR BLOCK

1. Remove the EJECTOR BLOCK (refer to 3-4-3).
2. Remove the TAPE GUIDE HOLDER BLOCK (refer to 3-4-4, 3).
3. Remove the (A) screw and remove the CAPSTAN MOTOR as shown in Fig. 3-21.

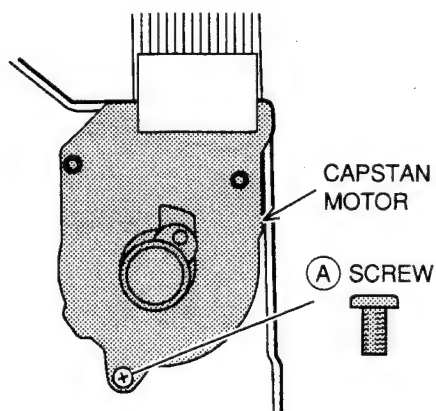


Fig. 3-21

4. Reassemble in the reverse order for installation.

### 3-4-6. Removal of the PINCH ROLLER BLOCK

1. Remove the EJECTOR BLOCK (refer to 3-4-3).
2. Remove the (A) screw and remove the PINCH ROLLER BLOCK by pulling it up.

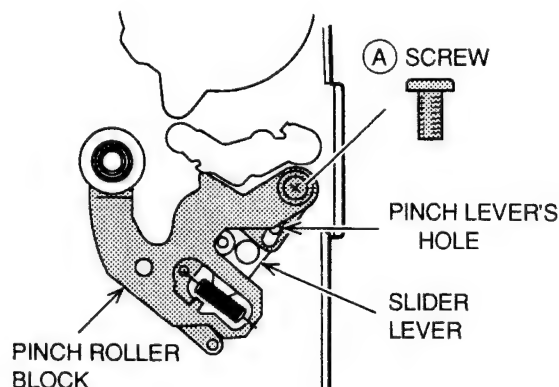


Fig. 3-22

3. When installing, make sure to align the SLIDER LEVER's pin with the hole on the PINCH LEVER as shown in Fig. 3-22.

### 3-4-7. Removal of the (T) REEL PART

1. Remove the EJECTOR BLOCK and PINCH ROLLER BLOCK (refer to 3-4-3 and 3-4-6).
2. Remove the two BRAKE GUIDE retaining (A) screws.

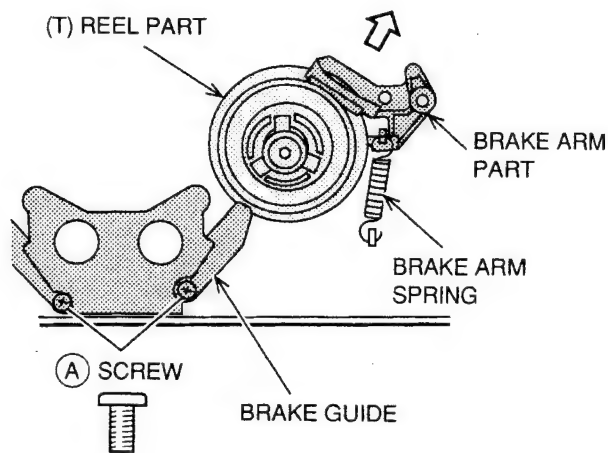


Fig. 3-23

3. Unhook the BRAKE ARM SPRING then move the BRAKE ARM PART in the direction of the arrow and pull it up, taking care when removing it.
4. Remove the (T) REEL PART from its shaft.
5. Reassemble in the reverse order for installation.

### 3-4-8. Removal of the (S) REEL PART and TENSION BLOCK

1. Remove the EJECTOR BLOCK (refer to 3-4-3).
2. Remove the (A) screw and remove the BAND GUIDE.

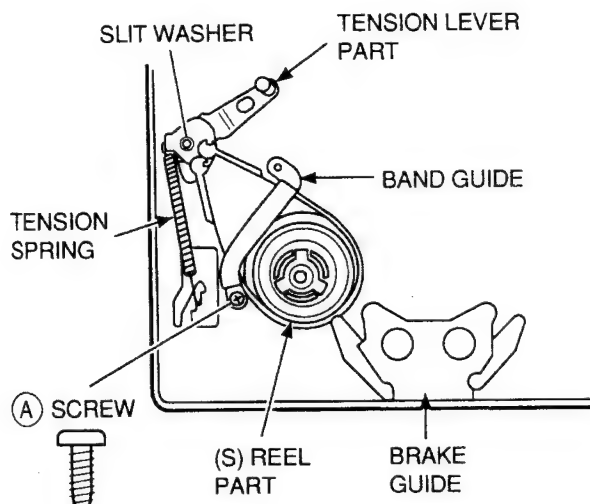


Fig. 3-24

3. Remove the BRAKE GUIDE then remove the (S) REEL PART from its shaft taking care not to damage the TENSION SHEET.
4. Remove the slit washer on the TENSION LEVER PART and unhook the TENSION SPRING then remove the TENSION BLOCK.
5. Reassemble in the reverse order for installation.

### 3-4-9. Replacement of the SYNCHRO BELT

1. Remove the EJECTOR BLOCK (refer to 3-4-3).
2. Remove the CAPSTAN MOTOR BLOCK (refer to 3-4-5).
3. Remove the PINCH ROLLER BLOCK (refer to 3-4-6).
4. Remove the (T) REEL PART (refer to 3-4-7).
5. Remove the IDLER PART by pulling it up then remove the SYNCHRO BELT as shown in Fig. 3-25.

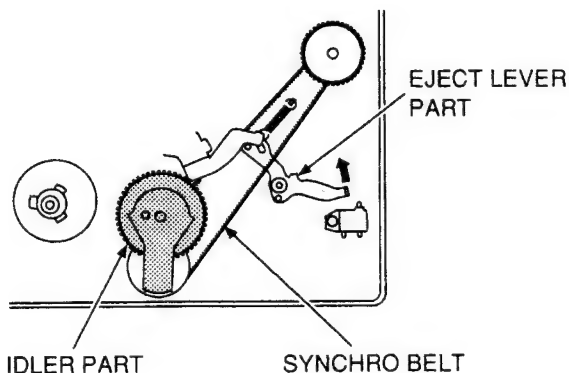


Fig. 3-25

6. Reassemble in the reverse order for installation. When replacing a new SYNCHRO BELT, take care not to damage or scratch it.

### 3-4-10. Replacement of the LOADING MOTOR

1. Remove the EJECTOR BLOCK (refer to 3-4-3).
2. Unsolder the two red and white wires from the flexible PCB.

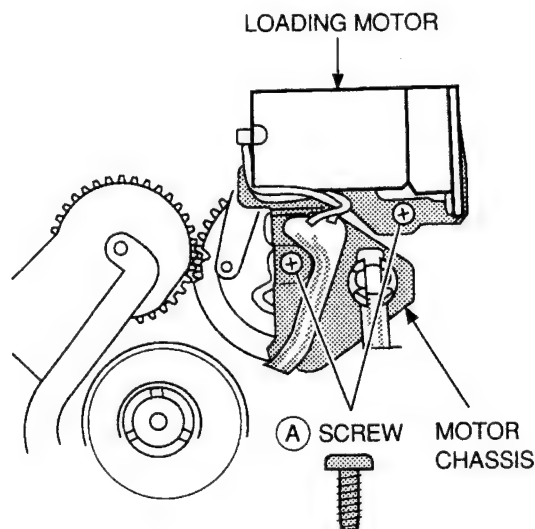


Fig. 3-26

3. Remove the two (A) screws which retain the MOTOR CHASSIS as shown in Fig. 3-26.
4. Remove the two (B) screws which retain the LOADING MOTOR and replace it with a new one as shown in Fig. 3-27.

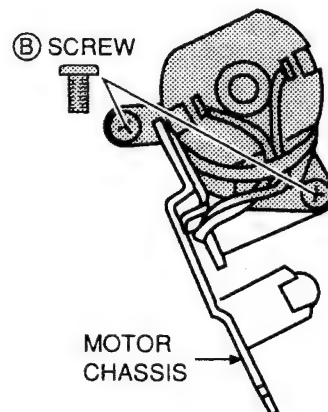


Fig. 3-27

5. Reassemble them in the reverse order for installation. When reattaching the MOTOR CHASSIS on the MECHA. CHASSIS, take care not to loose the timing of the RELAY GEAR and TOGGLE GEAR as shown in Fig. 3-28 (refer to 3-4-11, steps 8 to 9 if necessary).

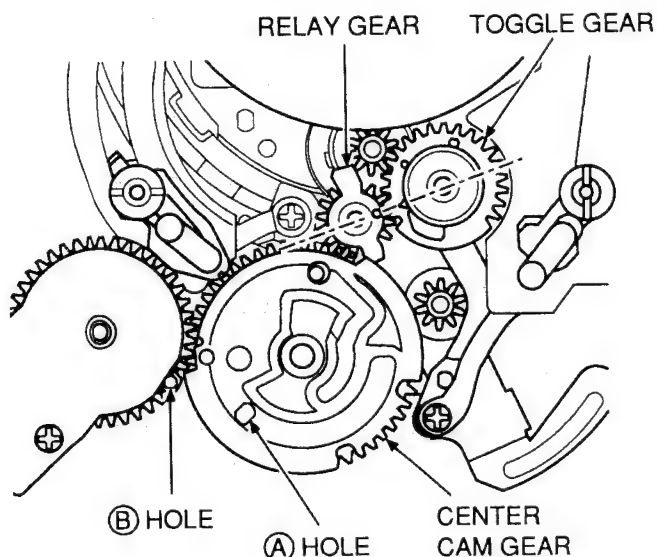


Fig. 3-28

When soldering the two wires, the black wire should be soldered on the right side (marked "B" on the flexible PCB).

### 3-4-11. Replacement of the MODE SWITCH

1. Remove the EJECTOR BLOCK (refer to 3-4-3).
2. Remove the BAND GUIDE and TENSION BLOCK (refer to 3-4-8, steps 2 & 4).
3. Remove the two MOTOR CHASSIS retaining screws (refer to 3-4-10, step 3)
4. Remove the RELAY GEAR and CENTER CAM GEAR by pulling them upwards as shown in Fig. 3-29.
5. Remove the (A) screw which retains the MODE SWITCH and remove the MODE SWITCH carefully so as not to damage the flexible PCB as shown in Fig. 3-29.
6. Unsolder the MODE SWITCH and carefully peel it off from the flexible PCB.
7. Replace it with a new one and install it in the reverse order. When soldering the MODE SWITCH, take special care to place the MODE SWITCH in the correct position on the flexible PCB. And make sure that the MODE SWITCH's (B) hole is aligned with its reference hole on the chassis and the hole on the SLIDER PLATE PART.
8. Place the CENTER CAM GEAR on the MECHA. CHASSIS. At this point, align the (C) part (part with unbroken teeth) of the MODE SWITCH with the groove on the CENTER CAM GEAR as shown in Fig. 3-30.

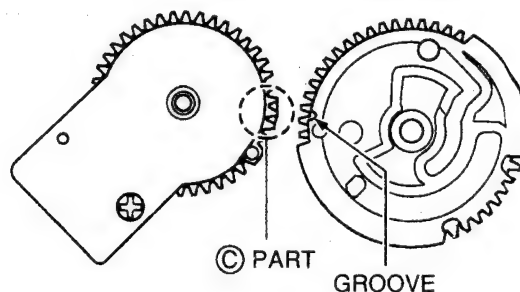


Fig. 3-30

And also move the PINCH CAM LEVER in the direction of the arrow and set it where the pin of the PINCH CAM LEVER is visible through the hole on the CENTER CAM GEAR as shown in Fig. 3-29.

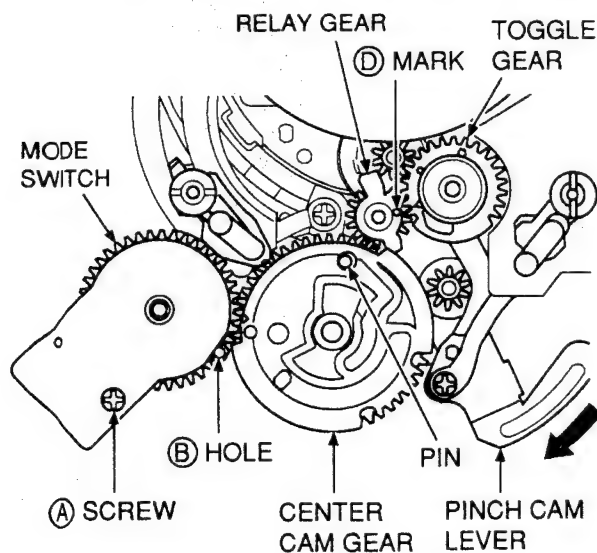


Fig. 3-29

9. Place the RELAY GEAR so that the (D) mark on the RELAY GEAR is aligned with the "<" mark on the TOGGLE GEAR as shown in Fig. 3-29.
10. Attach the MOTOR CHASSIS by tightening the two retaining screws.
11. Supply DC 4.5 V to the LOADING MOTOR and confirm that the loading mechanism operates properly in both the loading and unloading directions and each gear is correctly aligned.

#### NOTE:

Take care not to damage the flexible PCB near the MOTOR CHASSIS during this procedure.



### 3-4-12. Disassembling the loading mechanism

1. Remove the EJECTOR BLOCK and HEAD DRUM BLOCK (refer to 3-4-1 and 3-4-3).
2. Remove the CAPSTAN MOTOR BLOCK (refer to 3-4-5, 2 to 3).
3. Remove the PINCH ROLLER BLOCK (refer to 3-4-6, 2)
4. Remove the LOADING MOTOR BLOCK retaining screw (refer to 3-4-10, step 3).
5. Remove the (A) screw which retains the SUPPLY LOADING LEADER PART as shown in Fig.3-31.

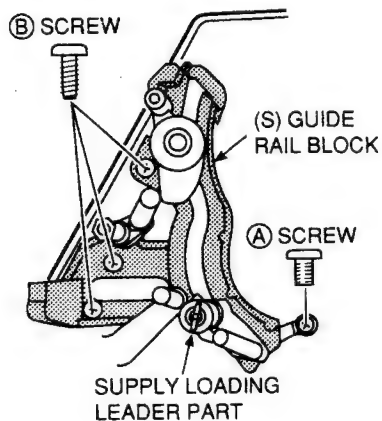


Fig. 3-31

6. Remove the three (B) screws then remove the (S) GUIDE RAIL BLOCK as shown in Fig. 3-31.
7. Remove the (C) screw which retains the (T) GUIDE RAIL as shown in Fig.3-32.

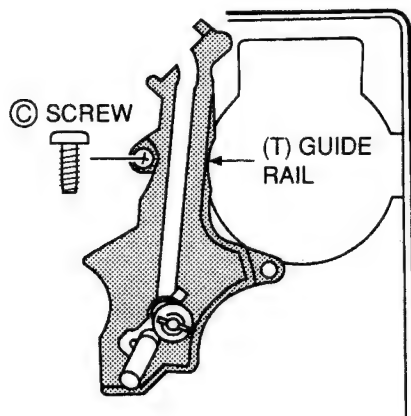
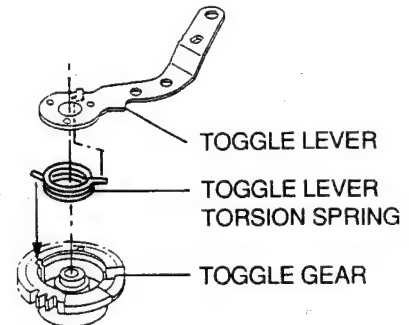


Fig. 3-32

8. Then remove the RELAY GEAR and TOGGLE GEAR BLOCK (TOGGLE GEAR, TOGGLE LEVER and TOGGLE LEVER TORSION SPRING) with the TAKE UP LOADING LEADER PART, take care not to lose the TOGGLE LEVER TORSION SPRING as it may jump free.



TOGGLE GEAR BLOCK

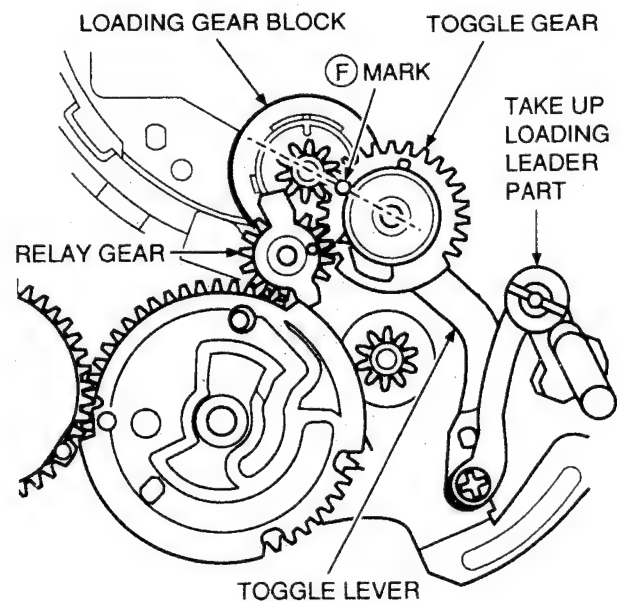


Fig. 3-33

9. Remove the two (D) screws then remove the GEAR PLATE PART as shown in Fig. 3-34.

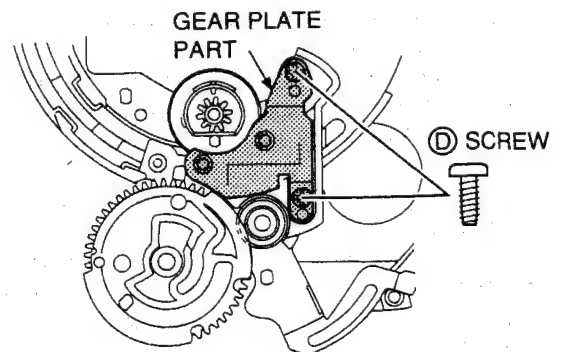


Fig. 3-34

10. Remove the LOADING GEAR BLOCK (LOADING (1) GEAR, LOADING (2) GEAR and LOADING TORSION SPRING) and slide the RING SLIDER in the clockwise direction to remove the RING SLIDER from the RING HOLDER as shown in Fig. 3-35. Then remove the RING HOLDER and replace it if necessary.

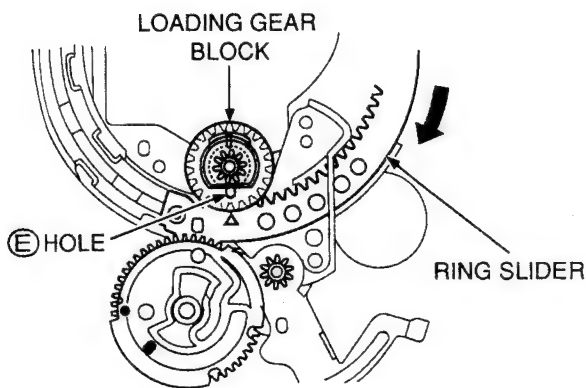
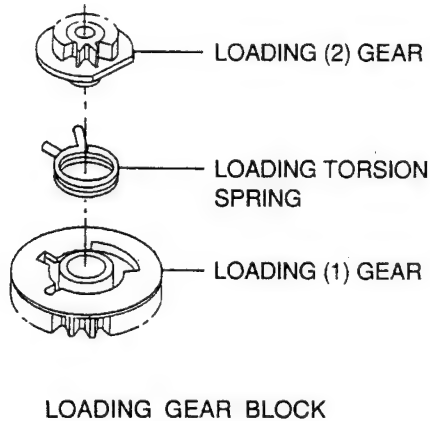


Fig. 3-35

11. To reassemble these parts, proceed in the reverse order of step 1 to 10.

When reassembling parts concerned with the MODE SWITCH's timing, proceed with special care.

- 1) When placing the LOADING GEAR BLOCK on the MECHA. CHASSIS, both the LOADING GEAR BLOCK's ⓔ hole and RING SLIDER's Δ mark should be aligned with their reference hole on the MECHA. CHASSIS as shown in Fig. 3-35.
- 2) When placing the TOGGLE GEAR BLOCK, the TOGGLE GEAR BLOCK's ⓔ mark should be aligned with the LOADING GEAR BLOCK's shaft as shown in Fig. 3-33.
- 3) When placing the RELAY GEAR, the RELAY GEAR's ⓐ mark must be aligned with the < mark of the TOGGLE GEAR (refer to 3-4-11, step 9). At this point confirm that the ⓐ part (the part with unbroken teeth) of the MODE SWITCH is aligned with the groove on the CENTER CAM GEAR and the MODE SWITCH's ⓐ hole is aligned with its reference hole on the CHASSIS and the hole of the SLIDER PLATE (refer to Fig. 3-30 and 3-29).

## IV. MECHANICAL ADJUSTMENT

### 4-1. BACK TENSION

1. Play back a CASSETTE TORQUE METER TW-6111 (AJ-729749J) and confirm that the reading of the SUPPLY REEL on the meter is 6.5 to 9 g-cm.
2. If the result is not satisfactory, loosen the (A) screw and adjust the TB HOLDER position repeatedly until the result is satisfactory.

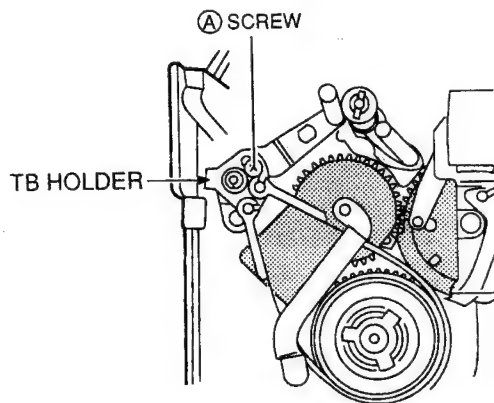


Fig. 4-1

3. The fluctuation of the reading during playback, should be less than 2 g-cm.  
If the result is not satisfactory, check the (S) REEL PART.

### 4-2. TAPE TRANSPORT ADJUSTMENT

#### NOTE:

1. The following adjustments are required only when an irregularity is found since these adjustments are precisely corrected at the factory.
2. When the HEAD DRUM BLOCK is replaced, perform only step 4-2-3, loading leader height adjustment.
3. Remove the CAMERA BLOCK first before making the adjustment and set the unit to the TEST mode 02 (refer to the information section on page 5).

#### 4-2-1. REVIEW ARM height adjustment

1. Play back a recorded tape which is no longer needed.
2. Check the tape transport near the REVIEW ARM TAPE GUIDE. If it is not satisfactorily, turn the (A) nut on the REVIEW ARM TAPE GUIDE until the edge of the tape barely touches the lower part of the TAPE GUIDE without any curl or wrinkle.

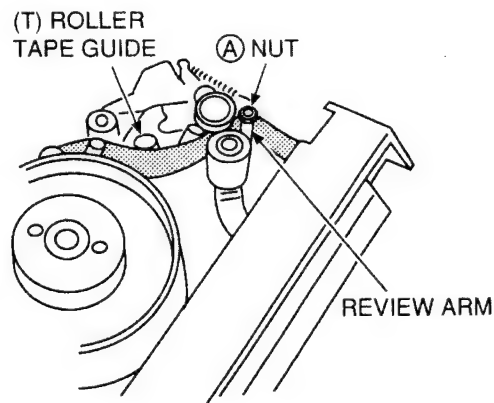


Fig. 4-2

3. Confirm that there is no curl or wrinkle between the PINCH ROLLER and REVIEW ARM TAPE GUIDE.

#### 4-2-2. SUPPLY TAPE GUIDE height adjustment

1. Play back a recorded tape which is no longer needed and set the unit to the REVIEW mode.
2. Check the tape transport near the SUPPLY TAPE GUIDE. If it is not satisfactorily, turn the (B) nut on the SUPPLY TAPE GUIDE until there is no curl or wrinkle near the SUPPLY TAPE GUIDE.

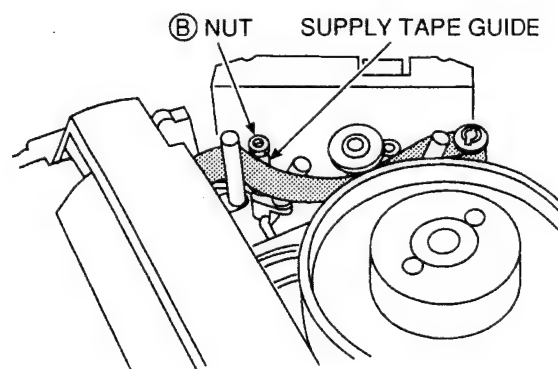


Fig. 4-3

3. Confirm that there is no curl or wrinkle between the (T) ROLLER TAPE GUIDE and REVIEW ARM TAPE GUIDE as shown in Fig. 4-2.
4. If the result is not satisfactory, readjust the REVIEW ARM TAPE GUIDE and SUPPLY TAPE GUIDE height.

### 4-2-3. LOADING LEADER height adjustment

1. Slightly loosen the set screws on the lower part of both the LOADING LEADER (T) PART and (S) PART with a hexagon screw driver, so that the tape guide can be adjusted with reasonable tightness.

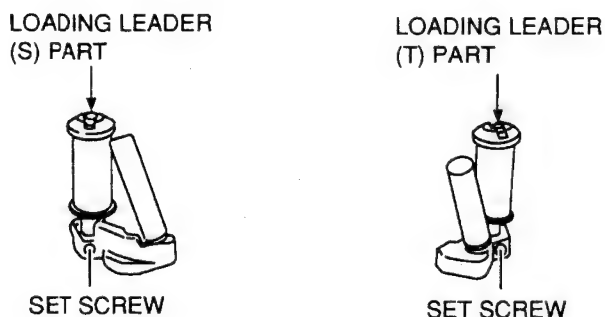


Fig. 4-4

2. Connect an oscilloscope's CH-1 to TERMINAL PCB P27 ① pin (PB ENVE) and CH-2 to ② pin (SWP) for triggering.
3. Play back the reference tape TF-200RFS (AT-751834J).
4. Turn the LOADING LEADER (T) and (S) head individually to obtain a flat RF envelope, as the ideal envelope shown in Fig. 4-5.

5. Play back the reference tape TF-201RFL (AT-751835J) then finely adjust both the LOADING LEADERS to obtain the best RF envelope.
6. Set the unit to the TEST mode 11 (refer to the information section) and press the WHITE BALANCE button and confirm that the RF envelope shares about 2/3 of the switching pulse width (including PCM zone) and also the fluctuating envelope's upper and lower edge is almost flat.

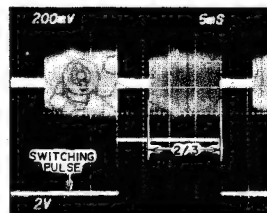


Fig. 4-6

7. After the adjustment is completed, tighten both the set screws with the hexagonal screw driver
8. In case the result is not satisfactory, repeat the adjustment from 4-2-1 to 4-2-3, step 5.

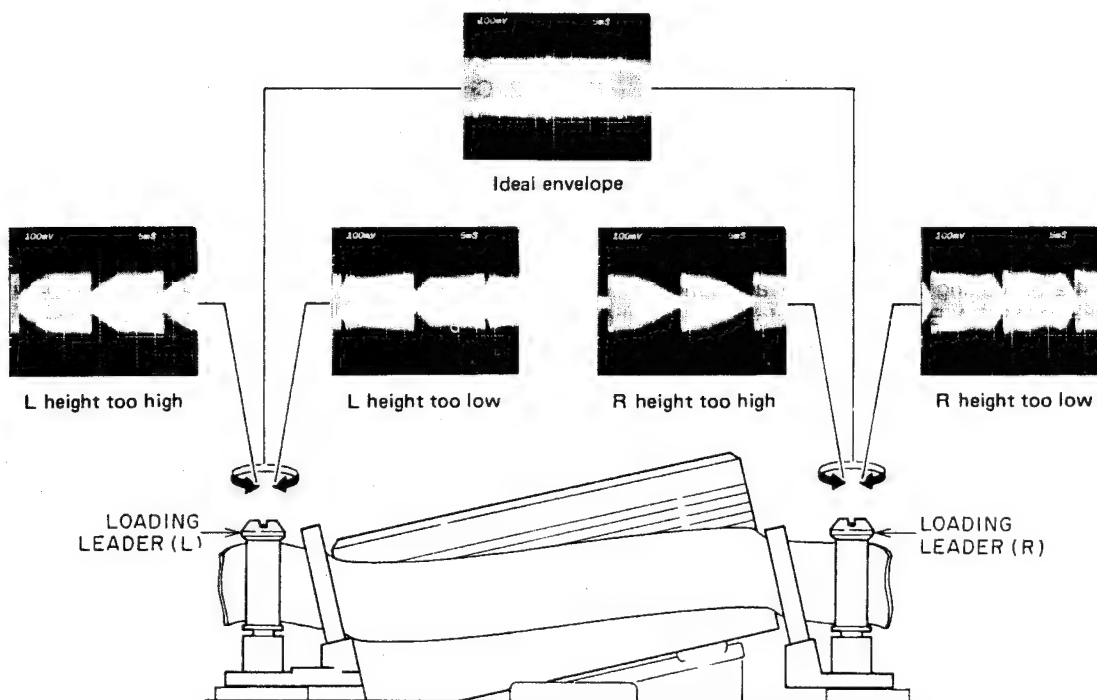


Fig. 4-5

## V. ELECTRICAL ADJUSTMENT

Precautionary items prior to adjustments.

1. The video output terminal should be terminated with 75 ohms (connect a dummy load or 75 ohms input TV).
2. Some adjustments should be performed in the "TEST MODE". Refer to the "INFORMATION" section on page 5.
3. When adjusting the MAIN PCB (VTR section), Connect a colour bar generator to the TERMINAL PCB which should be supplied as a servicing jig.
4. When adjusting the CAMERA section, the TERMINAL PCB is necessary as well as the MAIN PCB adjustment.
5. Some adjustments require the MAIN PCB to be turned over and extension cables to be connected. (5-2-1, step 3 and 5-2-2, step 1 & 2).

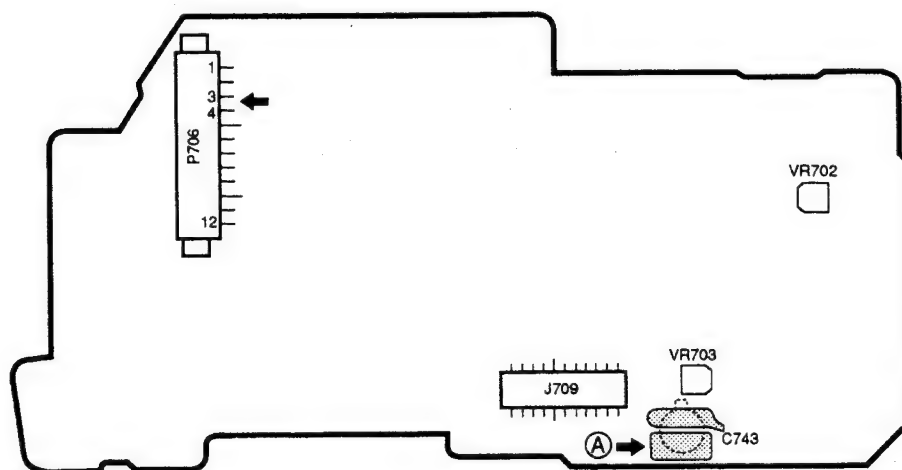
The following test tapes are required

Test tape	Part No.
TF-200RFS	AT-751834J
TF-201RFL	AT-751835J
TF-202CBS	AT-751836J
TF-203CBL	AT-751837J
TF-250AT	AT-751833J

### 5-1. POWER SUPPLY PCB

#### Note:

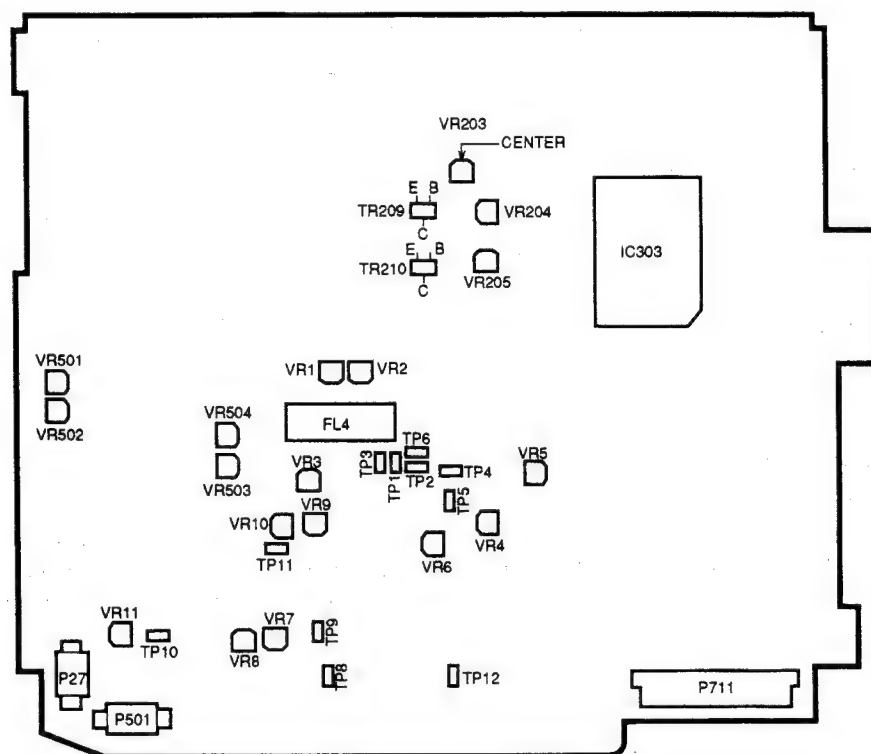
Check that there is no power supplied to the unit before making adjustment. Then detach the POWER SUPPLY PCB from the MAIN PCB and remove the shield cover with a soldering iron. Connect the MAIN PCB P309 and POWER SUPPLY PCB J709 with the extension cable. Then supply power to the unit and slide the power switch to the "CAMERA" position.



POWER SUPPLY PCB (TOP VIEW)

Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
1	AL 5V	-	CAMERA ON	Pattern (shown (A) arrow)	VR703	Connect a digital DC voltmeter to point (A) (where the C743 positive lead is soldered) then adjust VR703 so that the reading on the meter is $4.90 \pm 0.02$ V.
2	CAMERA 5V	-	CAMERA ON	P706 (3 or 4) pin	VR702	Connect a digital DC voltmeter to the P706 (3 or 4) pin then adjust the VR702 so that the reading on the meter is $4.78 \pm 0.03$ V.

## 5-2.MAIN PCB

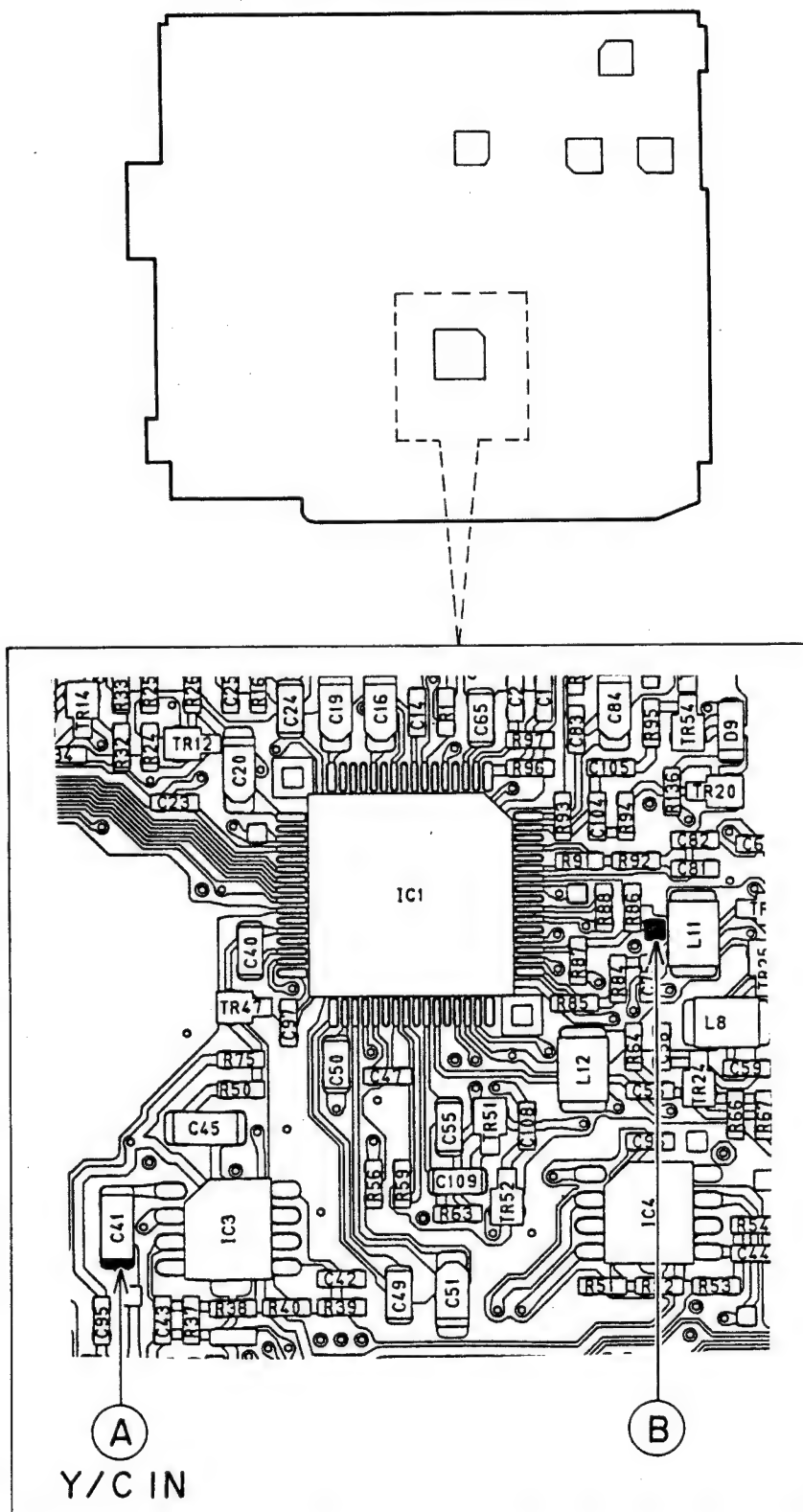


MAIN PCB (BOTTOM VIEW)



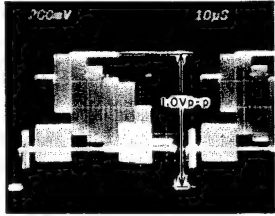
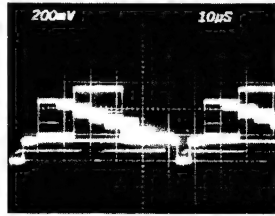
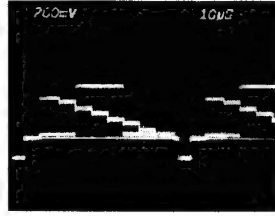
## 5-2-1.VIDEO ADJUSTMENT

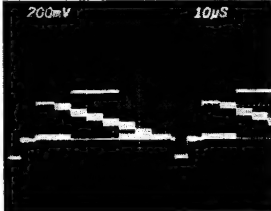
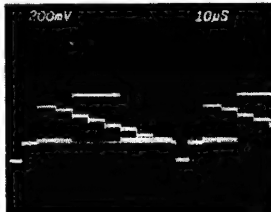
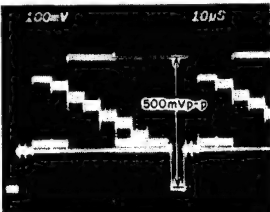
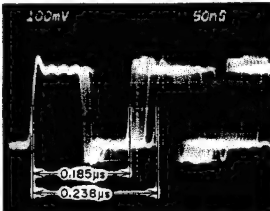
MAIN PCB (TOP VIEW)

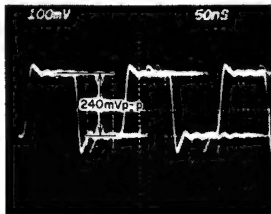
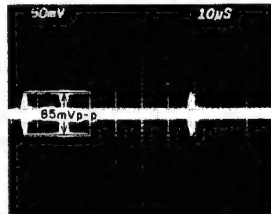
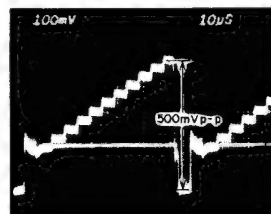


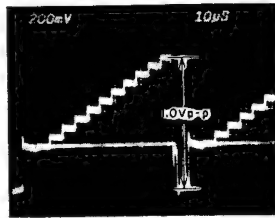
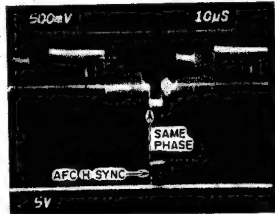
### Note:

- 1.Solder the Y/C OUT lead wire from the TERMINAL PCB to point ① before making the adjustment.
- 2.Supply 3.0 to 4.0 volts to point ② when adjusting step 3) ( I REFERENCE adj ).
- 3.If the REC → PB picture quality is not satisfactory even if the REC CURRENT adjustment has been performed, demagnetize the rotary heads and try again.

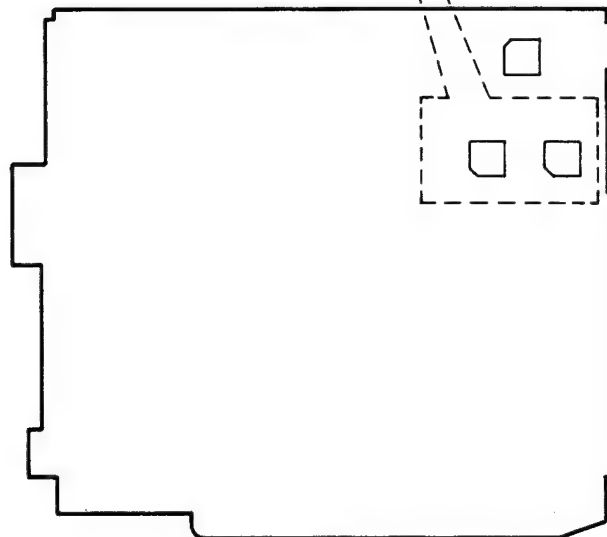
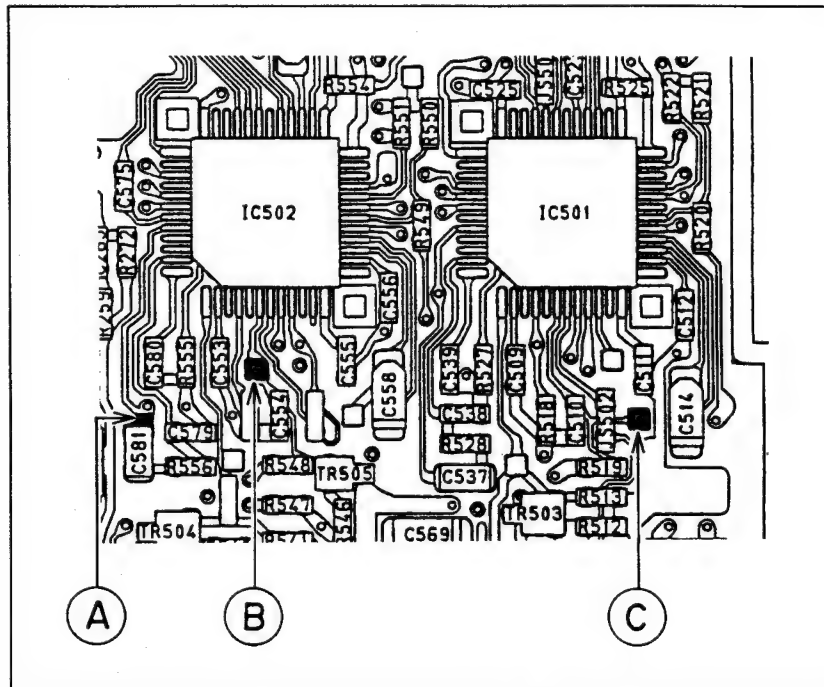
Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
1	VIDEO AGC	PAL colour bar signal	CAMERA EE & TEST mode 02	TP8 (with 75 ohms termination)	VR6	 <p>Solder the Y/C out lead wire to the appropriate point as shown on page 29 then supply the PAL colour bar signal. Connect an oscilloscope to TP8 and adjust VR6 so that the VIDEO level is 1.0 Vp-p.</p>
2	Y/C COMB FILTER	PAL colour bar signal	CAMERA EE & TEST mode 04	TP2	VR5 & VR4	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Supply the colour bar signal ( the same as step1) and connect an oscilloscope to TP2. Press the "COUNTER RESET" button and adjust VR5 and VR4 alternately so that the chroma level is minimum.</p>

Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
3	I REFERENCE	PAL colour bar signal	CAMERA EE & TEST mode 04	TP1	VR3	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Supply the colour bar signal (the same as step1) and connect an oscilloscope to TP1. Supply 3 to 4 volts to the ⑧ point (IC1 ⑤ pin, SWP) as shown on page 29 so that output of TP1 disappears. Press the "COUNTER RESET" button to resume output on TP1. Then adjust VR3 so that the chroma level is minimum.</p>
4	Y EMPHASIS	PAL colour bar signal	CAMERA EE & TEST mode 02	TP3	VR1	 <p>Supply the same colour bar signal as step1. Connect an oscilloscope to TP3 and adjust VR1 so that the Y level is 500 mVp-p.</p>
5	FM CARRIER & DEVIATION	Stair step signal	CAMERA EE & TEST mode 02	TP9	VR10 & VR9	 <p>Supply the stair step signal in the same way as step1. Connect an oscilloscope to TP9 and adjust VR10 so that the sync tip becomes 0.238 <math>\mu</math>s (4.2 MHz). Adjust VR9 so that the white peak becomes 0.185 <math>\mu</math>s (5.4 MHz). Adjust the VR10 and VR9 alternately until the result is satisfactory.</p>

Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
6	VIDEO REC CURRENT	-	CAMERA REC & TEST mode 11	TP9 & VR203 (center)	VR7 & VR203	<p>Disconnect the Y/C IN wire at point ① and connect the CAMERA BLOCK. Set the unit to TEST mode 11 and press the FADER button to choose WHITE FADE mode. Connect an oscilloscope to TP9 and adjust VR7 (Y REC CURRENT) so that the Y REC CURRENT is 240 mVp-p.</p>  <p>REC Y</p> <p>Connect CH-1 of the oscilloscope to VR203 center lead and CH-2 to VIDEO OUT or fH/2 for triggering. Adjust VR203 so that the CHROMA REC CURRENT is 85 mVp-p at the burst signal area as shown.</p>  <p>REC CHROMA</p> <p>Press the FADER button to resume the normal camera mode and make a recording on the blank tape then play it back to check the picture quality. If it is not satisfactory, demagnetize the rotary heads and check the recording quality again.</p>
7	PB Y LEVEL.1	TEST TAPE TF-200RFS	VTR PB	TP6	VR8	 <p>Connect an oscilloscope to TP6 and adjust VR8 so that the Y level is 500 mVp-p.</p>

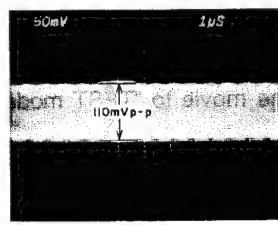
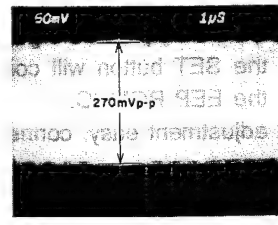
Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
8	PB Y LEVEL 2	TEST TAPE TF-200RFS	VTR PB	TP8 (with 75 ohms termination)	VR2	 <p>Connect an oscilloscope to TP8 and adjust VR2 so that the Y level is 1.0 Vp-p.</p>
9	SKEW H PHASE	TEST TAPE TF-200RFS	VTR PB (CUE or REVIEW)	TP8 & TP12	VR11	 <p>Connect CH-1 of an oscilloscope to TP8 and CH-2 to TP12. Adjust VR11 (AFC H PHASE) so that the leading edge of the AFC H sync aligns with the leading edge of the VIDEO OUT's H sync.</p>

## 5-2-2.AUDIO & SERVO ADJUSTMENT



MAIN PCB (TOP VIEW)

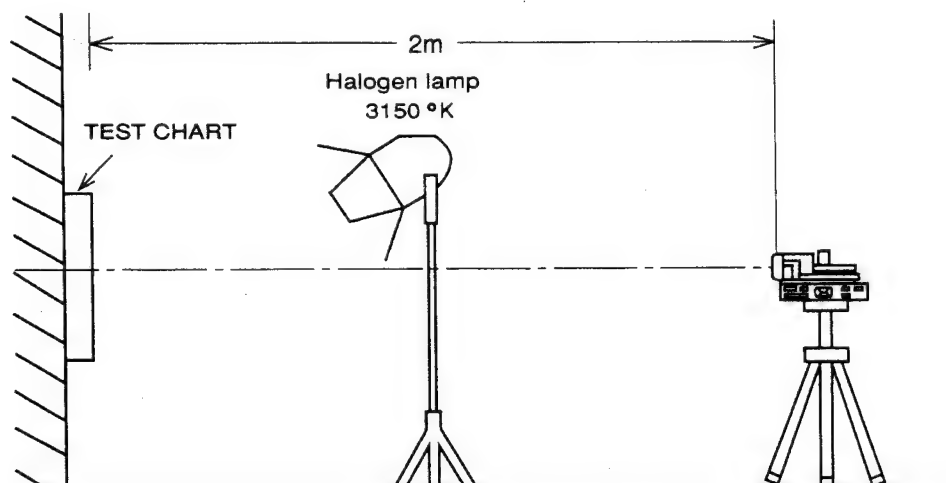


Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
1	I <sub>o</sub> (1.5 MHz)	Test tape TF-200RFS	PB & audio mode: stereo (PV-M4)	IC501 ④ pin (test point ①) & ⑥ pin (test point ③)	VR502	Play back the test tape TF-200RFS. Read the V REF voltage at point ① (the voltage should be about 2.1 V) with a digital DC voltmeter. Then connect a digital DC voltmeter to point ③ and adjust VR502 so that the voltage is exactly the same as V REF voltage.
2	I <sub>o</sub> (1.7 MHz) (PV-M4 only)	Test tape TF-200RFS	PB & audio mode: stereo	IC502 ④ pin (test point ①) & ⑥ pin (test point ③)	VR503	Play back the test tape TF-200RFS. Read the V REF voltage at point ① (the voltage should be about 2.1 V) with a digital DC voltmeter. Then connect a digital DC voltmeter to the point ③ and adjust VR503 so that the voltage is exactly the same as V REF voltage.
3	L+R DEV	TEST TAPE TF-203CBL	PB & audio: L-CH only	LINE OUT	VR501	Play back the test tape TF-203CBL. (PV-M4: Set the audio monitor to L-CH) Adjust VR501 so that the output level is - 7.5 dBs.
4	L-R DEV (PV-M4 only)	TEST TAPE TF-203CBL	PB & audio: R-CH only	LINE OUT	VR504	Play back the test tape TF-203CBL and set the audio monitor to R-CH. Adjust VR504 so that the output level is - 7.5 dBs.
5	A. FM REC CURRENT	-	CAMERA REC	TR209 (emitter)	VR204	 <p>Connect an oscilloscope to the TR209 emitter lead and adjust VR204 so that the AUDIO FM REC CURRENT is 110 mVp-p, as shown.</p>
6	ATF REC CURRENT	-	CAMERA REC	TR210 (emitter)	VR205	 <p>Connect an oscilloscope to the TR210 emitter lead and adjust VR205 so that the ATF REC CURRENT is 270 mVp-p as shown.</p>

## 5-3.CAMERA BLOCK ADJUSTMENT

### 5-3-1.STANDARD ADJUSTMENT

Standard setting for the CAMERA BLOCK adjustment



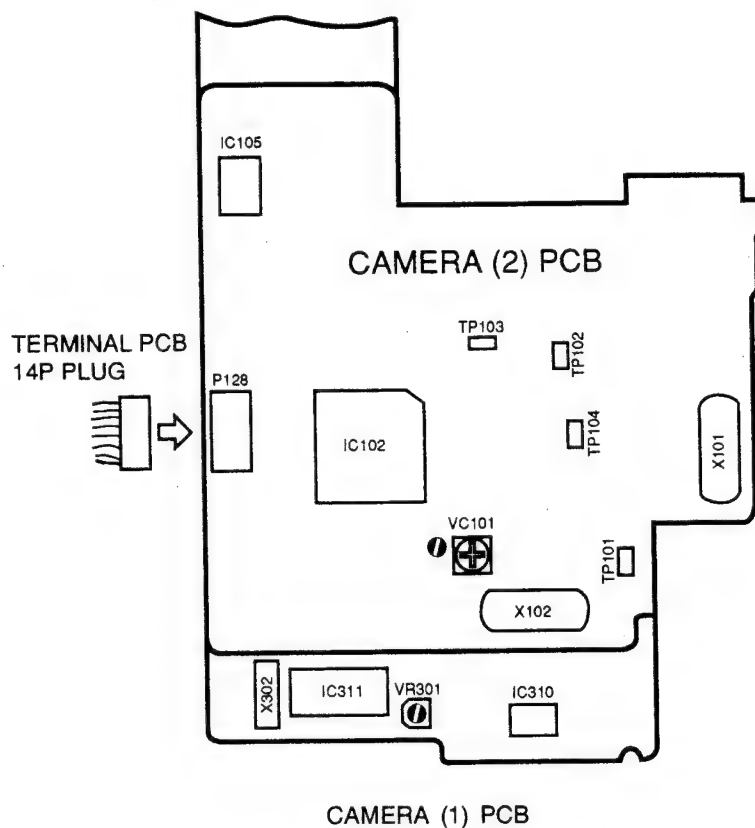
- Pattern: Reflection type, GREY SCALE or COLOUR BAR (we recommend the use of a light box with a transparent chart, instead of the reflection type, and a halogen lamp)
- Light:  $3150 \pm 50$  °K (colour temperature),  $3500 \pm 500$  Lx (intensity)
- Distance between the pattern and lens: 2 m
- Waveform size:  $40 \mu\text{s}$  (at stair step part or colour bar part) on the oscilloscope
- VECTOR SCOPE setting: 75 % saturation

#### Note

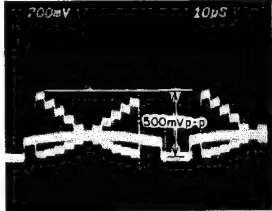
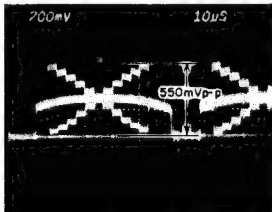
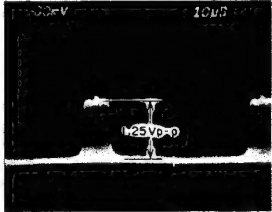
\*Most of the camera adjustments should be performed in "TEST mode 81" using the micro computer and D/A converter equipped with this video movie.

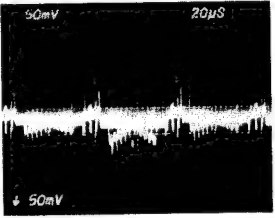
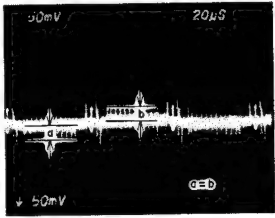
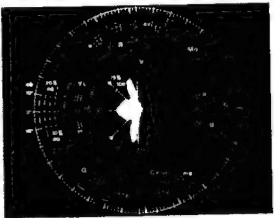
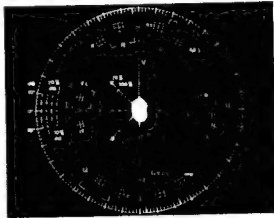
To set the movie to "TEST mode 81", refer to the "TEST MODE" section in "INFORMATION" on page 5.

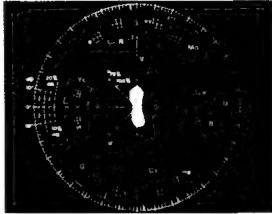
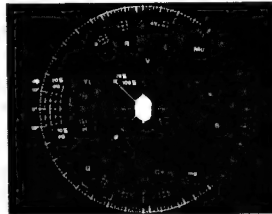
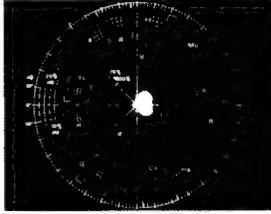
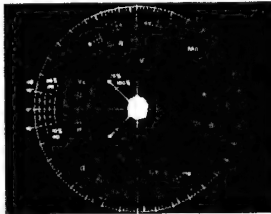
1. Engage TEST mode 81, a squid mark appears on the screen. Then press the "display" button. A number of numeral rows appear on the screen. The 2 digit number in the right upper corner is a preset number. (Make sure that the ELECTRIC VIEWFINDER is connected, to display the data on the screen.)
2. Start the adjustment from "No.00" (preset No.00) and each time you press the SET button or > button, you can proceed to the next preset number. Pressing the < button will return to the previous preset number.  
When proceeding to the next preset number without adjustment, never press the "SET" button, only use the > button.
3. Adjustment is possible by pressing the ^ or v buttons, and the data you are adjusting is displayed in hexadecimal numbers on the display during adjustment.
4. Pressing the SET button will conclude the adjustment in each preset number. Adjusted data will be memorized and stored in the EEP ROM IC.
5. To make adjustment easy, connect CH-2 of an oscilloscope to the TERMINAL PCB P128 ① pin (1/2 fH) for triggering in most cases.



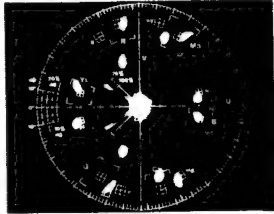
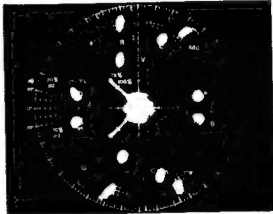
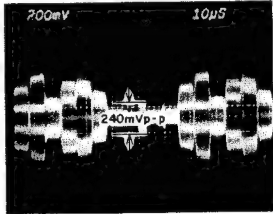
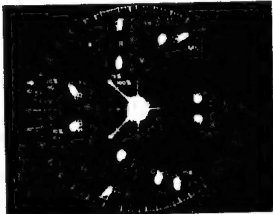
Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
1	fsc	-	EE, "PRESET No.00"	TP101 (CAMERA (2) PCB)	VC101	Connect a digital DC voltmeter to TP101. Adjust VC101 so that the reading on the meter is $2.2 \pm 0.1$ V. (Pressing the "SET" button will skip "PRESET No.01" and proceed to "PRESET No.02" automatically.)
2	HALL AMP OFF-SET.1	-	EE, "PRESET No.00"	-	-	Press the "SET" button.
3	HALL AMP OFF-SET.2	-	EE, "PRESET No.01"	-	-	No operation.
4	ØR OFF-SET	-	EE, "PRESET No.02"	TV SCREEN	^ or v button	If a white line appears on the left side of the screen, press the cursor button until the line disappears and press the "SET" button. (Unless the white line is on the screen, adjustment is not necessary. Simply press the "SET" button.)
5	CDS LEVEL (IRIS close)	-	EE, "PRESET No.03"	TERMINAL PCB P128 ⑬ pin (IRIS LEVEL)	VR301	Connect a digital DC voltmeter to the TERMINAL PCB P128 ⑬ pin and adjust VR301 so that the voltage is $DC\ 0.45 \pm 0.05V$ . Then press the "SET" button. (Pressing the "SET" button will skip "PRESET No.04 and No.05" and proceed to "PRESET No.06" automatically.)

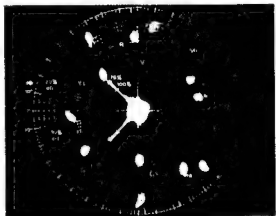
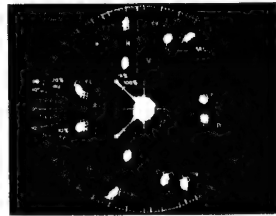
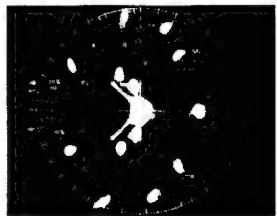
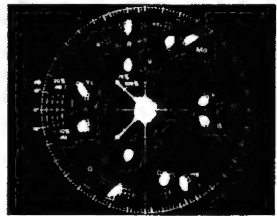
Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
6	IRIS CONTROL VOLTAGE (IRIS close)	-	EE, "PRESET No.04"	-	-	No operation.
7	IRIS LEVEL (IRIS open)	-	EE, "PRESET No.05"	-	-	No operation.
8	CDS LEVEL	GREY SCALE CHART	EE, "PRESET No.06"	TERMINAL PCB P128 ⑦ pin (CDS 4)	∧ or ∨ button	 <p>Connect an oscilloscope to the TERMINAL PCB P128 ⑦ pin. Adjust one of the cursor buttons so that the CDS level becomes 500 mVp-p. Then press the "SET" button.</p>
9	IRIS LEVEL CHECK	GREY SCALE CHART	EE, "PRESET No.05"	TERMINAL PCB P128 ⑬ pin (IRIS LEVEL)	-	Connect an oscilloscope to the TERMINAL PCB P128 ⑬ pin. Press the < button and go back to "PRESET No.05". Adjust the camera zoom so that the stair step waveform part is 40 μs width. Confirm that the IRIS LEVEL is DC 4.2 ± 0.2 V.
10	Y. AGC LEVEL	GRAY SCALE CHART	EE, "PRESET No.07"	TERMINAL PCB P128 ⑩ pin (AGC OUT)	∧ or ∨ button	 <p>Connect an oscilloscope to the TERMINAL PCB P128 ⑩ pin. Adjust one of the cursor buttons so that the Y. AGC LEVEL is 550 mVp-p. Then press the SET button.</p>
11	V sub	Spotlight	EE, "PRESET No.08"	TERMINAL PCB P128 ⑦ pin (CDS 4)	∧ or ∨ button	 <p>Connect an oscilloscope to the TERMINAL PCB P128 ⑦ pin and shoot a very blight object, like a spotlight. Adjust one of the cursor buttons so that the voltage of the shoulder part of the waveform is 1.25 V and the smear is minimum. Then press the "SET" button.</p>

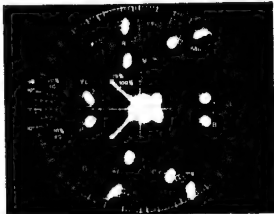
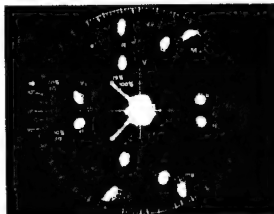
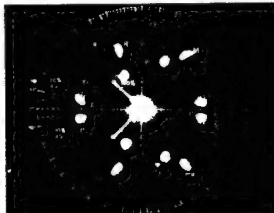
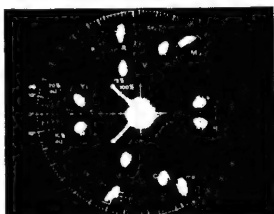
Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
12	Cyan 1 GAIN	GRAY SCALE CHART	EE, "PRESET No.09"	TERMINAL PCB P128 ④ pin (CY) & ⑥ pin (CY 1)	^ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect CH-1 of an oscilloscope to the TERMINAL PCB P128 ④ pin (CY) &amp; CH-2 to ⑥ pin (CY 1). Set the oscilloscope's display mode to "ADD" and CH-2 polarity to "INVERTED". Press one of the cursor buttons so that "a" level is equal to "b" level between each adjacent H period. Then press the "SET" button.</p>
13	Yellow 1 GAIN	GRAY SCALE CHART	EE, "PRESET No.0A"	VIDEO OUT & TERMINAL PCB P128 ③ pin (YE), ⑤ pin (YE 1)	^ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to the VIDEO OUT and press the cursor button until the vibration of the center part is minimum. Then connect CH-1 of an oscilloscope to the TERMINAL PCB P128 ③ pin (YE) and CH-2 to ⑤ pin (YE 1). Set the oscilloscope's display mode to "ADD" and CH-2 to "INVERTED". Confirm that the "a" level is equal to "b" level the same as in step 12, in each adjacent H period. Then press the "SET" button.</p>

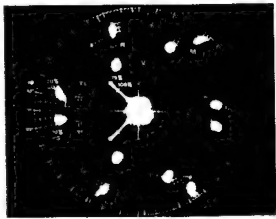
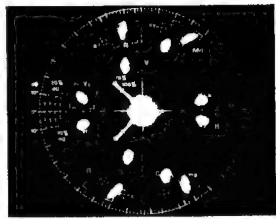
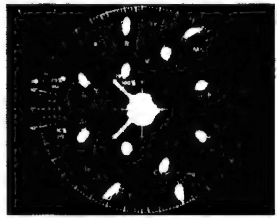
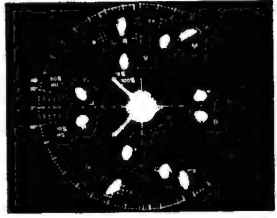
Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
14	R-Y CARRIER BALANCE	-	EE, "PRESET No.0B"	VIDEO OUT	^ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to VIDEO OUT. Press the cursor button so that the two separated spots become one spot and are positioned in the center of the scale (will move up and down). Then press the "SET" button.</p>
15	B-Y CARRIER BALANCE	-	EE, "PRESET No. 0C"	VIDEO OUT	^ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to VIDEO OUT. Press the cursor button so that the center spot is positioned in the center of the scale (will move left and right). Then press the "SET" button.</p>

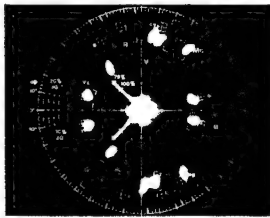
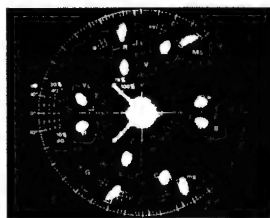
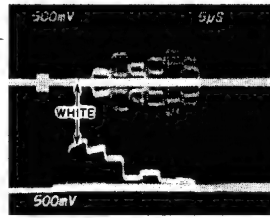


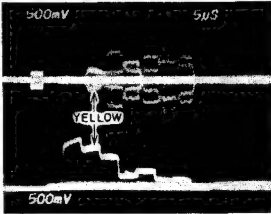
Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
16	BURST PHASE	COLOUR BAR CHART	EE, "PRESET No.0D"	VIDEO OUT	^ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to VIDEO OUT and mount a C-9 filter on the lens. Press the cursor button so that the correct burst angle is obtained. Press the "SET" button.</p>
17	BURST LEVEL	COLOUR BAR CHART	EE, "PRESET No. 0E"	VIDEO OUT & TERMINAL PCB P128 ⑭ pin (C. OUT)	^ or v button	 <p>Connect an oscilloscope to the TERMINAL PCB P128 ⑭ pin (C.OUT) and mount a C-9 filter on the lens. Press the cursor button so that the burst level is 240 mVp-p as shown. Then press the "SET" button.</p>  <p><b>Note:</b> Connect a vector scope to the VIDEO OUT and set the vector scope gain so that the burst signal level is exactly on the 75 % scale. Proceed the adjustment with this setting hereafter.</p>

Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
18	HUE	COLOUR BAR CHART	EE, "PRESET No. 0F"	VIDEO OUT	^ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to VIDEO OUT and mount a C-9 filter on the lens. Press the cursor button so that the colour's spots on the screen are as near as possible in the correct positions. Then press the "SET" button.</p>
19	R-Y WHITE BALANCE (4500 °K)	COLOUR BAR CHART	EE, "PRESET No. 10"	VIDEO OUT	^ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to VIDEO OUT and mount a C-9 filter (4500 °K colour temperature adjustment) on the lens. Press the cursor button so that the colour's spots on the screen are as near as possible in the correct positions (will move up or down). Then press the "SET" button.</p>

Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
20	B-Y WHITE BALANCE (4500 °K)	COLOUR BAR CHART	EE, "PRESET No.11"	VIDEO OUT	^ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to VIDEO OUT and mount a C-9 filter on the lens. Press the cursor button so that the colour's spots on the screen are as near as possible in the correct positions (will move left or right). Then press the "SET" button.</p>
21	R-Y LEVEL (4500 °K)	COLOUR BAR CHART	EE, "PRESET No.12"	VIDEO OUT	^ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to VIDEO OUT and mount a C-9 filter on the lens. Press the cursor button so that the red spot is in the correct position. Press the "SET" button.</p>

Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
22	B-Y LEVEL (4500 °K)	COLOUR BAR CHART	EE, "PRESET No.13"	VIDEO OUT	^ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to VIDEO OUT and mount a C-9 filter on the lens. Press the cursor button so that the blue spot is in the correct position. Press the "SET" button.</p>
23	R-Y MATRIX (4500 °K)	COLOUR BAR CHART	EE, "PRESET No.14"	VIDEO OUT	^ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to VIDEO OUT and mount a C-9 filter on the lens. Press the cursor button so that the blue spot is in the correct position. Press the "SET" button.</p>

Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
24	B-Y MATRIX (4500 °K)	COLOUR BAR CHART	EE, "PRESET No-15"	VIDEO OUT	∧ or ∨ button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to VIDEO OUT and mount a C-9 filter on the lens. Press the cursor button so that the red spot is in the correct position. Press the "SET" button.</p>
25	HIGH CLIP	COLOUR BAR CHART	EE, "PRESET No.16"	TERMINAL PCB P128 ⑦ pin (CDS4) & ⑭ pin (C.OUT)	∧ or ∨ button	 <p>Connect CH-1 of an oscilloscope to the TERMINAL PCB P128 ⑦ pin (CDS4), CH-2 to ⑭ pin (C.OUT) and mount a C-9 filter on the lens. Zooming the lens to the wide position so that the yellow part level of the CDS4 waveform is 800 mV. While observing the C.OUT waveform, press the cursor button until the carrier of the white part just disappears. Press the "SET" button when the adjustment is performed satisfactorily.</p>

Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
26	CHROMA CLIP	COLOUR BAR CHART	EE, "PRESET No.17"	TERMINAL PCB P128 ⑦ pin (CDS4) & ⑭ pin (C.OUT)	△ or ∇ button	 <p>Keep the zoom lens and oscilloscope in the same condition as 25). Press the cursor button until the yellow part level starts reducing. Then zoom the lens to the telephoto position and confirm there is no carrier on the white part of the waveform. If there is no carrier, press the "SET" button. In case the carrier appears at the white part, press the cursor button again until the carrier just disappears and yellow part level starts reducing. Repeat the same procedure until the carrier does not appear on the white part when the zoom lens is moved. Press the "SET" button when the adjustment is performed satisfactory.</p>
27	R-Y WHITE BALANCE (7200 °K)	COLOUR BAR CHART	EE, "PRESET No.18"	VIDEO OUT	△ or ∇ button	Connect a vector scope to VIDEO OUT and mount a C-16 filter (7200 °K colour temperature adjustment) on the lens. Press the cursor button so that the colour's spots on the screen are as near as possible in the correct positions (will move up or down). Then press the "SET" button.
28	B-Y WHITE BALANCE (7200 °K)	COLOUR BAR CHART	EE, "PRESET No.19"	VIDEO OUT	△ or ∇ button	Connect a vector scope to the VIDEO OUT and mount a C-16 filter on the lens. Press the cursor button so that the colour's spots on the screen are as near as possible in the correct positions (will move left or right). Then press the "SET" button.
29	R-Y LEVEL (7200 °K)	COLOUR BAR CHART	EE, "PRESET No.1A"	VIDEO OUT	△ or ∇ button	Connect a vector scope to VIDEO OUT and mount a C-16 filter on the lens. Press the cursor button so that the red spot is in the correct position. Press the "SET" button.
30	B-Y LEVEL (7200 °K)	COLOUR BAR CHART	EE, "PRESET No.1B"	VIDEO OUT	△ or ∇ button	Connect a vector scope to VIDEO OUT and mount a C-16 filter on the lens. Press the cursor button so that the blue spot is in the correct position. Press the "SET" button.
31	R-Y MATRIX (7200 °K)	COLOUR BAR CHART	EE, "PRESET No.1C"	VIDEO OUT	△ or ∇ button	Connect a vector scope to VIDEO OUT and mount a C-16 filter on the lens. Press the cursor button so that the blue spot is in the correct position. Press the "SET" button.

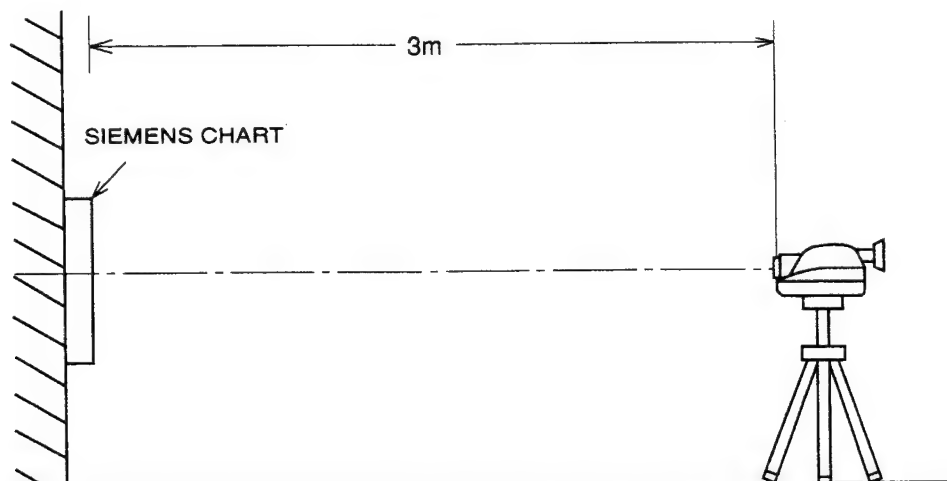


Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
32	B-Y MATRIX (7200 °K)	COLOUR BAR CHART	EE, "PRESET No.1D"	VIDEO OUT	^ or v button	Connect a vector scope to VIDEO OUT and mount a C-16 filter on the lens. Press the cursor button so that the red spot is in the correct position. Press the "SET" button.
33	R-Y WHITE BALANCE (3200 °K)	COLOUR BAR CHART	EE, "PRESET No.1E"	VIDEO OUT	^ or v button	Connect a vector scope to VIDEO OUT and mount a C-1 filter on the lens. Press the cursor button so that the colour's spots on the screen are as near as possible in the correct positions (will move up or down). Then press the "SET" button.
34	B-Y WHITE BALANCE (3200 °K)	COLOUR BAR CHART	EE, "PRESET No.1F"	VIDEO OUT	^ or v button	Connect a vector scope to VIDEO OUT and mount a C-1 filter on the lens. Press the cursor button so that the colour's spots on the screen are as near as possible in the correct positions (will move left or right). Then press the "SET" button.
35	R-Y LEVEL (3200 °K)	COLOUR BAR CHART	EE, "PRESET No.20"	VIDEO OUT	^ or v button	Connect a vector scope to VIDEO OUT and mount a C-1 filter on the lens. Press the cursor button so that the red spot is in the correct position. Press the "SET" button.
36	B-Y LEVEL (3200 °K)	COLOUR BAR CHART	EE, "PRESET No.21"	VIDEO OUT	^ or v button	Connect a vector scope to VIDEO OUT and mount a C-1 filter on the lens. Press the cursor button so that the blue spot is in the correct position. Press the "SET" button.
37	R-Y MATRIX (3200 °K)	COLOUR BAR CHART	EE, "PRESET No.22"	VIDEO OUT	^ or v button	Connect a vector scope to VIDEO OUT and mount a C-1 filter on the lens. Press the cursor button so that the blue spot is in the correct position. Press the "SET" button.
38	B-Y MATRIX (3200 °K)	COLOUR BAR CHART	EE, "PRESET No.23"	VIDEO OUT	^ or v button	Connect a vector scope to VIDEO OUT and mount a C-1 filter on the lens. Press the cursor button so that the red spot is in the correct position. Press the "SET" button.
39	R-Y WHITE BALANCE (FL LAMP)	COLOUR BAR CHART	EE, "PRESET No.24"	VIDEO OUT	^ or v button	Connect a vector scope to VIDEO OUT and mount a C-8 filter on the lens. Press the cursor button so that the colour's spots on the screen are as near as possible in the correct positions (will move up or down). Then press the "SET" button.
40	B-Y WHITE BALANCE (FL LAMP)	COLOUR BAR CHART	EE, "PRESET No.25"	VIDEO OUT	^ or v button	Connect a vector scope to VIDEO OUT and mount a C-8 filter on the lens. Press the cursor button so that the colour's spots on the screen are as near as possible in the correct positions (will move left or right). Then press the "SET" button.

Step	Adjustment item	Input signal or test tape	Mode	Test point	Adjustment part	Result and remarks
41	R-Y LEVEL (FL LAMP)	COLOUR BAR CHART	EE, "PRESET No.26"	VIDEO OUT	^ or v button	Connect a vector scope to VIDEO OUT and mount a C-8 filter on the lens. Press the cursor button so that the red spot is in the correct position. Press the "SET" button.
42	B-Y LEVEL (FL LAMP)	COLOUR BAR CHART	EE, "PRESET No.27"	VIDEO OUT	^ or v button	Connect a vector scope to VIDEO OUT and mount a C-8 filter on the lens. Press the cursor button so that the blue spot is in the correct position. Press the "SET" button.
43	R-Y MATRIX (FL LAMP)	COLOUR BAR CHART	EE, "PRESET No.28"	VIDEO OUT	^ or v button	Connect a vector scope to VIDEO OUT and mount a C-8 filter on the lens. Press the cursor button so that the blue spot is in the correct position. Press the "SET" button.
44	B-Y MATRIX (FL LAMP)	COLOUR BAR CHART	EE, "PRESET No.29"	VIDEO OUT	^ or v button	Connect a vector scope to VIDEO OUT and mount a C-8 filter on the lens. Press the cursor button so that the red spot is in the correct position. Press the "SET" button.
45	AUTO W. BALANCE (4600 °K)	GRAY SCALE CHART	EE, "PRESET No.2A"	-	-	Mount a C-8 filter on the lens and press the "SET" button.
46	AUTO W. BALANCE CALCULATION	-	EE, "PRESET No.2B"	-	-	Press the "SET" button.

## 5-3-2. AUTO FOCUS TRACKING ADJUSTMENT

### Setting for the CAMERA AUTO FOCUS TRACKING adjustment



- Pattern : Siemens chart
- Distance between the pattern and camera lens : exactly 3 m. (If the distance is not accurate, proper adjustment can not be performed.)
- TEST mode : "TEST mode 82" (refer to the information section on page 5.)
- Light : Center of the chart is not saturated when the zoom is in the full wide position as "TEST mode 82" will set the IRIS fully open.

#### Note:

- The purpose of this adjustment is when zooming from "wide" to "telephoto" (or vice versa), the focus lens follows the zoom lens motion and tries to keep the focus in the best position. And also sets the zoom lens's telephoto and wide end positions within range, not losing the focus. These control data will be kept in the EEPROM IC.
- Unless it is absolutely necessary, do not perform this adjustment as it is complicated and will take too much time.
- In case the auto focus tracking adjustment is necessary:
  1. The LENS BLOCK or ZOOM ENCODER PCB (on the LENS BLOCK) is replaced.
  2. The CCD element or CAMERA (1) PCB is replaced.
  3. The EEPROM IC (IC310), micro processing IC (IC309) or OPE-AMP IC (IC304 or 305) in the CAMERA (1) PCB is replaced.

- 1) Mount a unit on a tripod and set it so that the camera lens is exactly 3 m away from the siemens chart.
- 2) Engage "TEST mode 82", an octopus mark appears on the screen. Then press the "DISPLAY" button. A number of numeral rows appear on the screen. The numbers necessary on this adjustment are shown below. Confirm that the mode number is now "00".



- A → T/W 1 (A/D) data : Use this zoom lens position data in step 3) or 7).
- B → FOCUS CONDITION data : This value becomes maximum when the focus is in the best position during the adjustment. Use this value to find the best position when adjusting the focus manually with the "+" or "-" buttons.
- C → MODE number : Present mode number is indicated during the adjustment.
- D → T/W 2 (CAL) data : Use this value when comparing the data in step 12), in the telephoto position.
- E → T/W 1 (CAL) data : Use this value when comparing the data in step 12), in the wide position.
- F → FP number : Focus lens position data. Use this data in steps 5), 6), 8) to 10) and 12).

- 3) Set the zoom lens until the T/W 1 data becomes "61" by pressing the  $\wedge$  or  $\vee$  buttons while the unit is in "mode No.00".
- 4) Press the ">" button once and proceed to "mode No.01"  
Then press the "-" (or "+") button on the viewfinder until the picture on the screen is just in focus. (Pressing the "FOCUS" button once instead of the "-" or "+" button to set the AUTO FOCUS ON, is much easier for finding the best focus position.)
- 5) Press the "SET" button. The mode number turns to "02". Then press the "<" cursor button once to return to "mode No.01" and confirm that the FP (focus position) number is "00 00".
- 6) Set the focus lens by pressing the "+" (or "-") button until the FP number becomes "FE EC". Then press the zoom "T" button (or  $\wedge$  button) until the picture on the screen is just in focus in the telephoto position.  
(Never set the unit to the auto focus mode in this step.)  
Now read the T/W 1 data on the screen, and calculate the value of the T/W 1 data minus 34. If the value is 00, proceed to step 9). In case the value is not "00", proceed to step 7).
- 7) Return to "mode No.00" by pressing the "<" button. Set the new T/W 1 data. For example, if the value is +3, add 3 to the original T/W 1 data "61". Therefore the result becomes 64. So, set the T/W 1 data to "64" by pressing the " $\vee$ " button. Then repeat steps 4) to 5) and proceed to step 8).
- 8) Set the focus lens by pressing the "+" (or "-") button until the FP number becomes "FE EC". Then press the zoom "T" (or  $\wedge$  button) until the picture on the screen is just in focus in the telephoto position.  
(Never set the unit to the auto focus mode in this step.)
- 9) Press the "SET" button twice. Then return to "mode No.01" and press the "+" (or "-") button until the FP number becomes "FF BB". Press the "SET" button once then press the ">" button. Now Confirm that the mode number is "03" and FP number is "00 00".
- 10) Move the zoom lens to the wide direction by pressing the "W" zoom (or " $\vee$ ") button until the picture is just in focus. Then press the "SET" button. The focus lens starts moving until the sensor position is detected automatically. A few second later, the mode number will turn to "04". Now Confirm the FP number shown in the screen. If the FP number is between "96" to "FA", it means the adjustment is satisfactory. Press the "SET" button and conclude the adjustment. The mode number turns to "05" automatically.  
If the FP number is not between "96" to "FA", repeat the adjustment from steps 3) to 10) until the result is satisfactory.
- 11) Press the "FOCUS" button and set the unit to the "auto focus mode". Confirm that the focus is following satisfactorily when zooming the lens from wide to telephoto or vice versa. (Press only the zooming "T" or "W" button in this step. Never press the  $\wedge$  or  $\vee$  buttons as they will not detect both ends of the tracking range.)
- 12) Confirm whether the adjustment is perfect or not, by referring to the reference focus lens tracking data shown on next page. Set the zoom to the full wide position and read the T/W 1 (CAL) data and FP number data on the screen and compare with the reference data in the T/W 1 (CAL) list. If the actual data is within  $\pm 3$  of the reference data, the result is almost satisfactory. Then Set the zoom to the full telephoto position and read the T/W 2 (CAL) data and FP number data on the screen and compare it with the reference data in the T/W 2 (CAL) list. If the actual data is within  $\pm 3$  of the reference data, the result is almost satisfactory. Pick up a few points near zoom wide end and telephoto end and repeat the same procedure. If each comparison result is within  $\pm 3$  of the respective reference data, it means adjustment is satisfactory. Disengage "TEST MODE 82" by pressing the camera reset switch (the negative side of the battery terminal pin) located on the rear panel or disconnecting the power supply. In case the comparison value exceeds  $\pm 3$ , repeat the adjustment from the steps 3) to 11) until the result is satisfactory.

FP number list when the distance between the camera lens and chart is 3 m.

T/W 1 (CAL) LIST (WIDE POSITION)

	FP number							
T/W 1 (CAL)	0/8	1/9	2/A	3/B	4/C	5/D	6/E	7/F
00 ~ 07	0001	0004	0007	000A	000D	000F	0012	0014
08 ~ 0F	0017	001A	001C	001F	0021	0024	0026	0029
10 ~ 17	002B	002E	0030	0033	0035	0038	003B	003D
18 ~ 1F	0040	0043	0045	0048	004B	004D	0050	0053
20 ~ 27	0055	0058	005B	005E	0060	0063	0066	0069
28 ~ 2F	006B	006E	0071	0074	0077	0079	007C	007F
30 ~ 37	0082	0085	0088	008B	008E	0090	0093	0096
38 ~ 3F	0099	009C	009F	00A2	00A5	00A8	00AB	00AE
40 ~ 47	00B1	00B4	00B7	00BA	00BD	00C0	00C3	00C5
48 ~ 4F	00C8	00CB	00CE	00D1	00D4	00D7	00DA	00DD
50 ~ 57	00E0	00E3	00E6	00E9	00EC	00EF	00F2	00F5
58 ~ 5F	00F7	00FA	00FD	0100	0103	0106	0109	010B
60 ~ 67	010E	0111	0114	0116	0119	011C	011E	0121
68 ~ 6F	0124	0126	0129	012B	012E	0130	0132	0135
70 ~ 77	0137	0139	013C	013E	0140	0142	0144	0146
78 ~ 7F	0148	0149	014B	014D	014F	0150	0151	0153
80 ~ 87	0154	0155	0156	0157	0158	0159	0159	015A
88 ~ 8F	015A	015A	015A	015A	015A	0159	0159	0158
90 ~ 96	0158	0157	0156	0156	0156	0156	0156	

T/W 2 (CAL) LIST (TELEPHOTO POSITION)

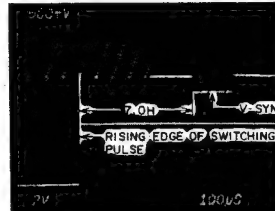
	FP NUMBER							
T/W 2 (CAL)	0/8	1/9	2/A	3/B	4/C	5/D	6/E	7/F
00 ~ 07	0046	0049	004C	0050	0054	0058	005C	0060
08 ~ 0F	0064	0068	006B	006F	0073	0077	007A	007E
10 ~ 17	0081	0085	0088	008C	008F	0092	0096	0099
18 ~ 1F	009C	009F	00A2	00A5	00A8	00AB	00AE	00B1
20 ~ 27	00B4	00B7	00BA	00BD	00C0	00C2	00C5	00C8
28 ~ 2F	00CA	00CD	00D0	00D2	00D5	00D7	00DA	00DC
30 ~ 37	00DE	00E1	00E3	00E5	00E8	00EA	00EC	00EE
38 ~ 3F	00F0	00F2	00F5	00F7	00F9	00FB	00FD	00FF
40 ~ 47	0100	0102	0104	0106	0108	010A	010B	010D
48 ~ 4F	010F	0110	0112	0114	0115	0117	0118	011A
50 ~ 57	011B	011D	011E	0120	0121	0122	0124	0125
58 ~ 5F	0127	0128	0129	012A	012C	012D	012E	012F
60 ~ 67	0130	0132	0133	0134	0135	0136	0137	0138
68 ~ 6F	0139	013A	013B	013C	013D	013E	013F	0140
70 ~ 77	0141	0141	0142	0143	0144	0145	0145	0146
78 ~ 7F	0147	0148	0148	0149	014A	014A	014B	014C
80 ~ 87	014C	014D	014D	014E	014F	014F	0150	0150
88 ~ 8F	0151	0151	0152	0152	0153	0153	0153	0154
90 ~ 97	0154	0155	0155	0155	0155	0155	0155	0155
98 ~ 9F	0155	0155	0155	0155	0155	0155	0155	0155
(FF)	0155	0155	0155					

## 5-4.FINAL ADJUSTMENT

Note : Set the unit to "TEST MODE 11" and press the "DISPLAY" button to display the MI-COM data on the screen (refer to the information section on page 5 before proceeding).

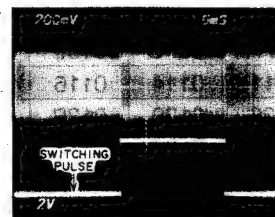
### 5-4-1. SWITCHING POINT ADJUSTMENT

1. Connect CH-1 of an oscilloscope to VIDEO OUT and CH-2 to the P27 ② pin (SWP) on the TERMINAL PCB.
2. Play back the reference tape TF-200RFS and press the "REC" button. Confirm that the switching point is positioned 7 H before the leading edge of the V-sync.



### 5-4-2. ATF TRACKING ADJUSTMENT

1. Connect CH-1 of an oscilloscope to the P27 ① pin (PB ENVE) and CH-2 to the P27 ② pin (SWP) for triggering on the TERMINAL PCB.
2. Play back the reference tape TF-200RFS and press the < or > button repeatedly until the RF envelope level becomes maximum and as flat as possible.
3. Press the "SHUTTER" button to memorize the best tracking point. Then press the "PLAY" button during playback to set the tracking center and confirm that the RF envelope is still at maximum.



### 5-4-3. MEMORIZATION OF THE I-HQ REFERENCE VOLTAGE

1. Connect CH-1 of an oscilloscope to the P27 ① pin (PB ENVE) and CH-2 to the P27 ② pin (SWP) for triggering on the TERMINAL PCB.
2. Set the tape speed to the "SP" mode.
3. Make a recording on TEST TAPE TF-250AT (AT-751833J) and play it back.
4. Press the > or < button repeatedly until the envelope level becomes maximum and observe the I-HQ ENVE DET data. Then press the > button until the I-HQ ENVE data value becomes minus 4 from the maximum point of the data.



11

```

* *   * *   * *   * *   * *   * *   * *   * *
* *   * *   * *   * *   * *   * *   * *   * *
* *   * *   * *   * *   * *   * *   * *   * *
[ * * ] [ * * ] * *   * *   * *   * *   * *   * *

```

(SP) (LP)

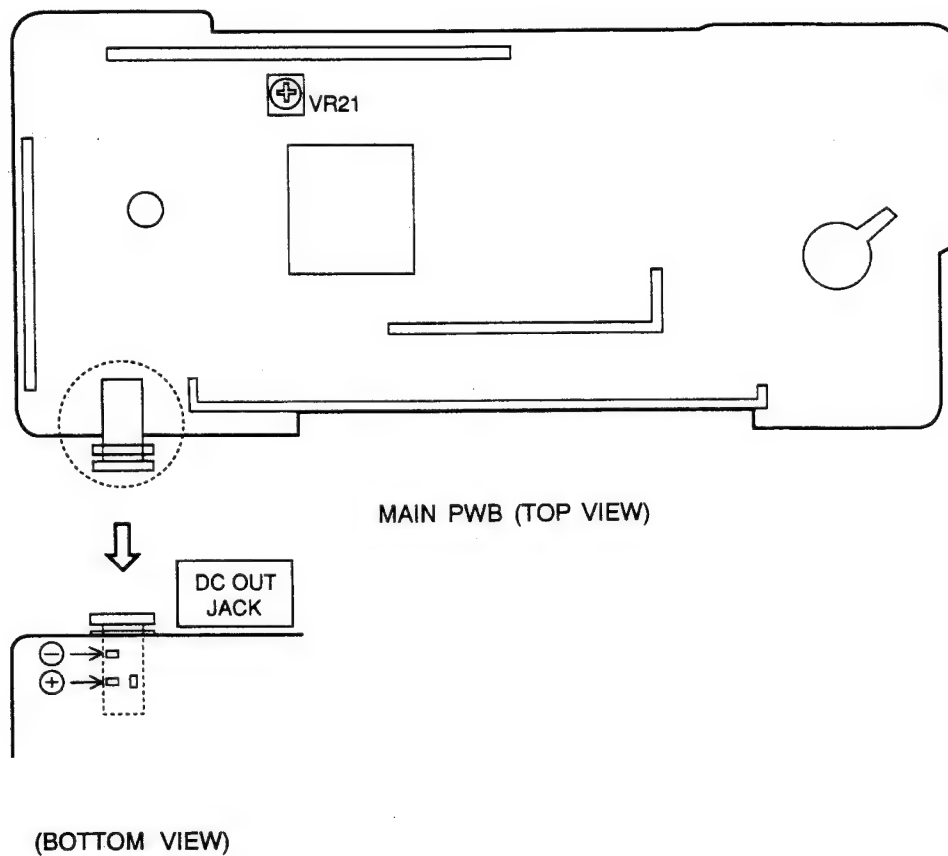
I-HQ. PRESET DATA

PRESENT I-HQ. ENVE DET DATA

5. Press the "SET" button and confirm that the ENVE DET data is almost the same as I-HQ PRESET data.
6. Set the tape speed to the "LP" mode and repeat steps 3 to 5.



## 5-5.AC ADAPTOR (VA-300) DC OUT ADJUSTMENT



1. Connect the video camera (PV-M2/M4) to the AC ADAPTOR and turn the camera POWER ON.
2. Connect a DC digital voltmeter to the DC OUT jack on the MAIN PWB.
3. Adjust VR21 so that the output voltage is 7.0 V.

## VI. PARTS LIST

### ATTENTION

1. When placing an order for parts, be sure to list Part No., Model No. and the description of each part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering.  
If not, a part different from the one you ordered may be delivered.
3. Since the parts shown in Parts List of Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.

### HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the Parts List.

a) Mechanism Block

#### 2. HEAD BASE BLOCK

Ref. No.	Part No.	Description
1	BH-T2023A320A	HEAD BASE BLOCK
2	HP-H2206A010A	HEAD R/P PR4-8FU C
3	ZS-477876	PAN20×03STL CMT
4	ZS-536488	BID20×08STL CMT
5	ZG-402895	SP CS ANGLE ADJUST

SP (Service Parts) Classification

This number corresponds with the individual parts index number in that figure.

b) PC Board

#### 6. MAIN PC BOARD

Ref. No.	Part No.	Description
IC1	EI-324536	IC HD14049BP
IC2	EI-336801	IC MB8841-564M
C1A	EC-338399	C MMY V 223M 250AC [U,E,B,S]
C1B	EC-350949	C MMY V 223M 250DC [J]
C1C	EC-338397	C MMY V 223M 125AC [C,A]
X1	EI-318384	OSC X'TAL NC-18C

Symbols for primary destination

[A] : AAL (U.S.A) [S] : SAA (Australia)  
[B] : BEAB (England) [U] : U/T (Universal Area)  
[C] : CSA (Canada)  
[E] : CEE (Europe) [V] : VDE (Germany)  
[J] : JPN (Japan) [Y] : Custom Version

SP (Service Parts) Classification

These reference symbols correspond with component symbols in the Schematic Diagrams.

The available PC Board Blocks are listed separately.

5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

### WARNING

△ (\*) INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

### AVERTISSEMENT

△ (\*) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

## 1. RECOMMENDED SPARE PARTS

We suggest you to stock the following Recommended Spare Part items listed below since they can cover most of the routine service.

Ref. No.	Part No.	Description
1	AV-B1045A010C	REMOCON BLK RC-M4 [PV-M4]
2	AV-B1045A010D	REMOCON BLK RC-M4F [PV-M4F]
3	BB-V3013A020A	MECHA DECK BLK PV-MS8
4	BH-V3013A400B	HEAD DRUM BLK PV-M4
5	BL-V3013A120A	TENSION BLK PV-MS8
6	BM-733286J	AF MOTOR ASSY
7	BM-410228J	MOTOR SCE-0301A
8	BM-733285J	PZ MOTOR ASSY
9	BO-410212J	ZOOM LENS G38C
10	BT-733243J	TRANS ETS22K867A
11	BV-V3013A200A	EJECTOR BLK PV-MS8
12	BV-V3013A070A	LEADER (S) BLK PV-MS8
13	BV-V3013A080A	LEADER (T) BLK PV-MS8
14	BV-V3013A130A	LOADING MOTOR BLK PV-MS8
15	EA-404434J	PCB FLEXIBLE AV JACK
16	EA-410230J	PCB FLEXIBLE CAMERA MAIN
17	EA-410233J	PCB FLEXIBLE OP MAIN
18	ED-410246J	D LED C.BR1102W RED TRT08E
19	ED-410589J	D LED C.CL180URCTS RED T08E
20	ED-410245J	D LED C.PG1102W GREEN TRT08E
21	ED-410215J	D LED GL453 INFRARED
22	ED-725278J	D LED SLR-34MC70F GREEN
23	ED-733249J	D LED SLR-34VR
24	ED-386025J	D SILICON CHIP DAN202U
25	ED-405339J	D SILICON CHIP DA115
26	ED-386024J	D SILICON CHIP DA204U
27	ED-408518J	D SILICON CHIP DA221
28	ED-386031J	D SILICON CHIP MA110-TW
29	ED-404449J	D SILICON CHIP MA132WK
30	ED-412061J	D SILICON CHIP MA147
31	ED-412092J	D SILICON CHIP MA717
32	ED-389579J	D SILICON CHIP RB400D
33	ED-389578J	D SILICON CHIP RB451F T106T08E
34	ED-733238J	D SILICON ERA15-01V
35	ED-385935J	D SILICON ERA22-04V3 T26 400/5
36	ED-371510	D SILICON ERA22-08Y F05
37	ED-380715J	D SILICON ERB83-004 40/1.7A
38	ED-733247J	D SILICON ERC81-004L7
39	ED-733246J	D SILICON ESAB92M-02
40	ED-732853J	D SILICON S1WB (A) 60
41	ED-733239J	D SILICON 1SS133T-77
42	ED-408555J	D SOHOTTKY CHIP U1GWJ49
43	ED-394636J	D VARACTOR CHIP 1SV200
44	ED-392394J	D ZENER CHIP MA3039-H TW
45	ED-404060J	D ZENER CHIP MA3075-L TW
46	ED-717552	D ZENER H MA4051-M
47	ED-724036J	D ZENER MTZJ27D
48	ED-733248J	D ZENER MTZJ5.6CT-77
49	*EF-410226J	FUSE C.SSFC 125V 3.15A T12E
50	*EF-404063J	FUSE ICP-F50 50V 2.0A
51	EF-733253J	FUSE THERMO S3
52	EF-733244J	FUSE 250V 1A
53	EI-408540J2	IC M37471M8-224FP EMZOPP2
54	EI-410216J	DETECTOR SPI-315-44 B.C
55	EI-410133J	IC AN1324NS
56	EI-410132J	IC AN1339S
57	EI-386023J	IC AN1358S-T1
58	EI-410134J	IC AN1393S
59	EI-403519J	IC AN2012SB
60	EI-408507J	IC AN2145FHP
61	EI-403580J	IC AN2457SB
62	EI-718598	IC AN8005
63	EI-386011J	IC BA10358F
64	EI-410179J	IC BA225F-T1
65	EI-408522J	IC CXA1204Q
66	EI-408571J	IC CXA1207AR
67	EI-408574J	IC CXA1208R
68	EI-408556J	IC CXA1488R
69	EI-408550J	IC CXD1172AM-T3
70	EI-408572J	IC CXL1506M
71	EI-733260J	IC FA5307S
72	EI-733262J	IC HA012612S

Ref. No.	Part No.	Description
73	EI-412017J	IC HA118041MP-ER
74	EI-414543J	IC LA6324NM
75	EI-403658J	IC LB1830M
76	EI-408523J	IC LB1851M
77	EI-408534J	IC MB3778PFV
78	EI-408552J1	IC MB636128 DAF02-FSY
79	EI-405377J	IC MB88346APFV EF [PV-M4/F]
80	EI-410131J	IC MC34074DR
81	EI-410137J	IC MC74HC02AFR
82	EI-410136J	IC MC74HC4002FR
83	EI-410135J	IC MC74HC4066FR
84	EI-410448J	IC MM1117XFF
85	EI-410449J	IC MM1118XFF
86	EI-403502J	IC MN3820S
87	EI-410172J	IC MN5151H
88	EI-401280J	IC MN73033XRA
89	EI-408501J1	IC M37451M8-224FP EMZCMR2
90	EI-403505J	IC M62352GP [PV-M2/F]
91	EI-408612J	IC NBC5800
92	EI-408541J	IC S-8420BF
93	EI-410452J	IC SC00314S66FER
94	EI-410138J	IC SC14S71FER
95	EI-410139J	IC SC7S04FER
96	EI-410169J	IC ST24C02AM1013TR
97	EI-408551J	IC TB6504F-EL
98	EI-408629J	IC TC4W53F
99	EI-404464J	IC TC7W08F
100	EI-408628J	IC TL8811F
101	EI-408383J	IC UPD6451AGT-819
102	EI-408520J2	IC UPD78136GF-026-3B9 EMZSYP3
103	EI-408557J	IC CXA1536Q [PV-M4/F]
104	EI-408543J	OSC CE CHIP FAR-C4CD04000-M20R
105	EI-408517J	OSC CE CHIP FAR-C4CD12000M02-R
106	EI-382875J	OSC CE CST4.00MGW 4MHZ
107	EI-408529J	OSC X,TAL C.CX-5F 12.000MHZ
108	EI-408530J	OSC X,TAL C.CX-5F 5.85938MHZ
109	EI-410176J	OSC X,TAL C.CX49F 17734.475KHZ
110	EI-410175J	OSC X,TAL C.JXO-3F 19.3125MHZ
111	EI-404438J	OSC X,TAL C.SMD-49 4.433619MHZ
112	EI-368825M	OSC X'TAL C-002RX 32.768KHZ
113	EI-409981J	PLATE CCD M2 PART
114	*EO-408538J	COILFIX CHIP ELL-06T*****
115	ES-410219J	OPERATION A M2
116	ES-404399J	OPERATION A M2F FRENCH
117	ES-410221J	OPERATION A M4
118	ES-404397J	OPERATION A M4F FRENCH
119	ES-410235J	OPERATION H M2 [PV-M2/F]
120	ES-410234J	OPERATION H M4 [PV-M4/F]
121	ES-410236J	OPERATION TW
122	ES-410531J	SW MICRO MPU10130MMB0
123	ES-408907J	SW MICRO MPU20110MMB0
124	ES-408906J	SW MICRO MPU30020MMB0
125	ES-733257J	SW MICRO MSS-8-2
126	ES-408905J	SW MODE SELECT MMS00140ZZB0
127	ES-413067J	SW SLIDE SSSS81 01-03*
128	ES-403634J	SW TACT SKEYAB
129	ET-410468J	DETECTOR GP1U561
130	ET-733287J	DETECTOR ON-1004
131	ET-733252J	PHOTO COUPLER PC111LS
132	ET-386053J	TR CHIP DTA143EU
133	ET-403804J	TR CHIP DTC124EE
134	ET-403663J	TR CHIP DTC124TU
135	ET-732638J	TR CHIP DTC144EK
136	ET-408879J	TR CHIP UN9111
137	ET-408883J	TR CHIP UN9113
138	ET-408880J	TR CHIP UN9115
139	ET-404465J	TR CHIP UN921D
140	ET-404462J	TR CHIP UN9211
141	ET-408886J	TR CHIP UN9213
142	ET-408884J	TR CHIP UN9215
143	ET-386029J	TR CHIP 2SB1121 T
144	ET-410433J	TR CHIP 2SB1124 S,T,U
145	ET-410150J	TR CHIP 2SB1218A R,S
146	ET-408616J	TR CHIP 2SB1462 R,S
147	ET-386028J	TR CHIP 2SB815 B6 TAT08E
148	ET-386030J	TR CHIP 2SC4081 R,S
149	ET-403561J	TR CHIP 2SC4617 R

Ref. No.	Part No.	Description
150	ET-405625J	TR CHIP 2SD1819A-TW R,S
151	ET-408617J	TR CHIP 2SD2216 R,S
152	ET-403559J	TR D-CHIP UMW1
153	ET-404454J	TR D-CHIP XP4312 TWT08E
154	ET-410239J	TR D-CHIP XP4401 TWT08E
155	ET-410240J	TR D-CHIP XP4501 TWT08E
156	ET-410241J	TR D-CHIP XP4601 TWT08E
157	ET-370634	TR DTA143XS
158	ET-382952J	TR DTC123ES
159	ET-410422J	TR FET CHIP 2SK1332-3 TLT08E
160	ET-733245J	TR FET 2SK951
161	ET-410217J	TR PHOTO PT4810F
162	ET-733251J	TR 2SB952
163	ET-403851J	TR CHIP 2SD2150 R,S
164	EY-410204J	MIC *M2
165	EY-404401J	MIC M2F FRENCH
166	EY-410203J	MIC M4
167	EY-404404J	MIC M4F FRENCH
168	MB-406821J	BELT SYNCHRO
169	MI-406823J	IDLER PART
170	ML-406864J1	ARM REVIW PART
171	MP-V3013A100A	PINCH ROLLER BLK PV-MS8
172	MS-406871J	GUIDE REVIW
173	MS-409943J1	GUIDE (1)
174	MT-406801J	REEL (S) PART
175	MT-406813J	REEL (T) PART
176	MZ-406815J	GEAR BELT (1) PART
177	MZ-406818J	GEAR BELT (2) PART
178	MZ-406915J	GEAR CAM CENTER
179	MZ-406872J	HOLDER TAPE GUIDE PART
180	BM-408631J	MOTOR DCX-30 A1VCR
181	VC-V3013A330E	E.V.F BLK PV-M2
182	VC-V3013A330F	E.V.F BLK PV-M2F
183	VC-V3013A330C	E.V.F BLK PV-M4
184	VC-V3013A330D	E.V.F BLK PV-M4F
185	VC-733284J	IG METER ASSY
186	VC-733283J	ZOOM ENCORDER

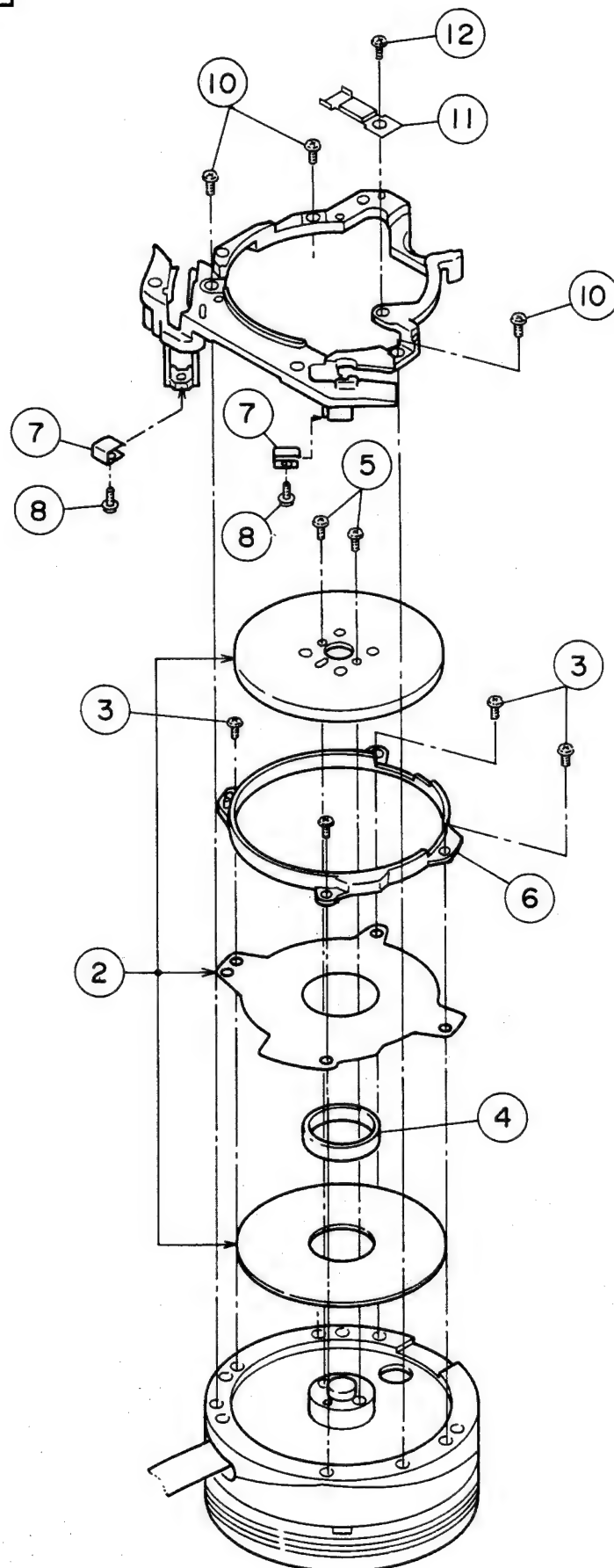
## 2. HEAD DRUM BLOCK

Ref.No.	Part No.	Description
1	BH-V3013A400B	HEAD DRUM BLK PV-M4 [INC. 2 TO 12]
2	BM-408631J	MOTOR DCX-30 A1VCR
3	ZS-377198	PAN17X04STL BZN PS1
4	MZ-407036J	COLLAR MOTOR
5	ZS-390437J	PAN14X03STL BZN PS1
6	HZ-407037J	HOLDER MOTOR
7	ZG-406976J	SP PLATE CHASSIS DRUM
8	ZS-409930J	PAN14X025STL BZN PS SPECIAL
9	MA-409235J	CHASSIS DRUM
10	ZS-377198	PAN17X04STL BZN PS1
11	VT-408632J	EARTH BRUSH PART EMZ
12	ZS-409994J	PAN14X016STL NI3 PS SPL

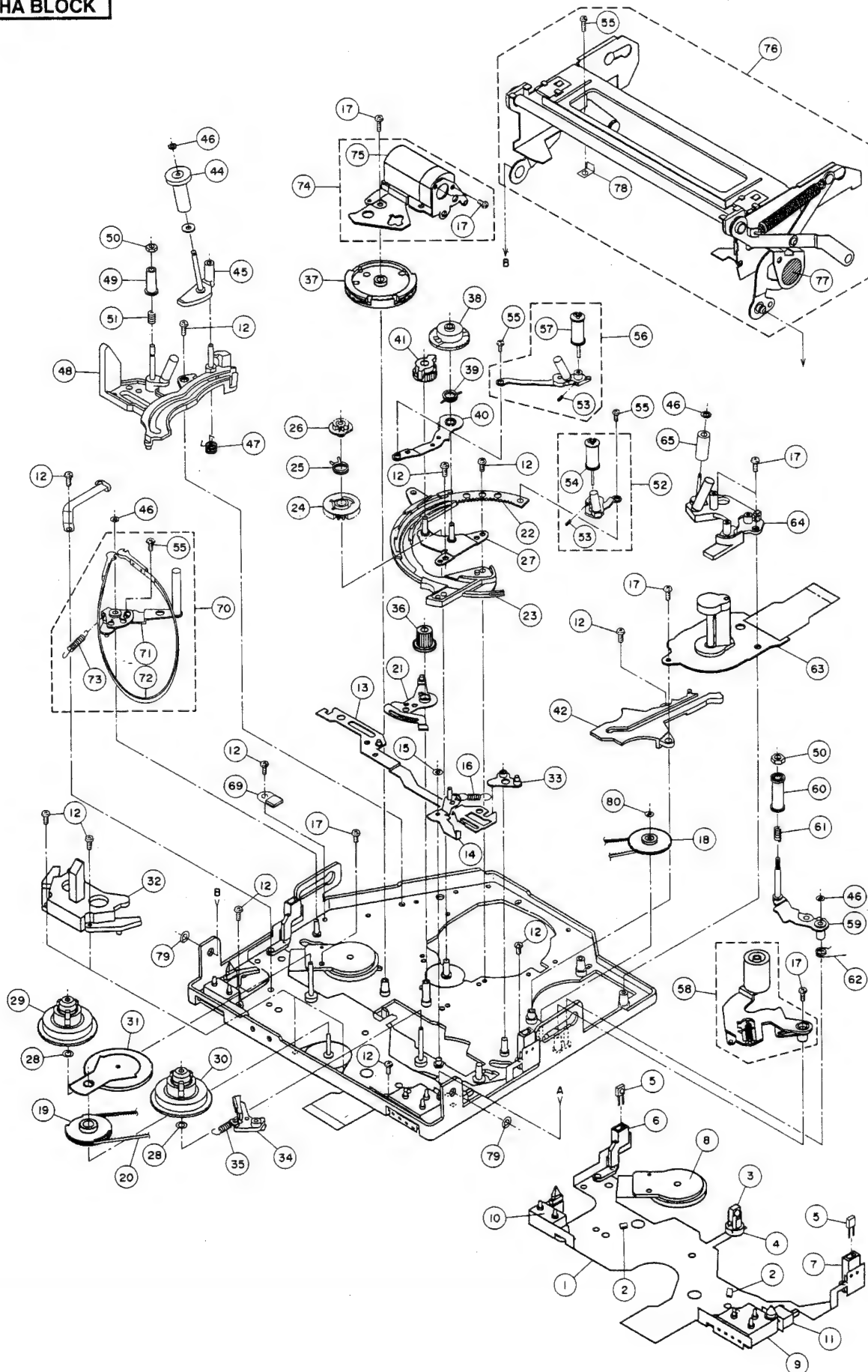
### NOTE:

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

# HEAD DRUM BLOCK



# MECHA BLOCK



## PARTS LIST

### 3. MECHA BLOCK

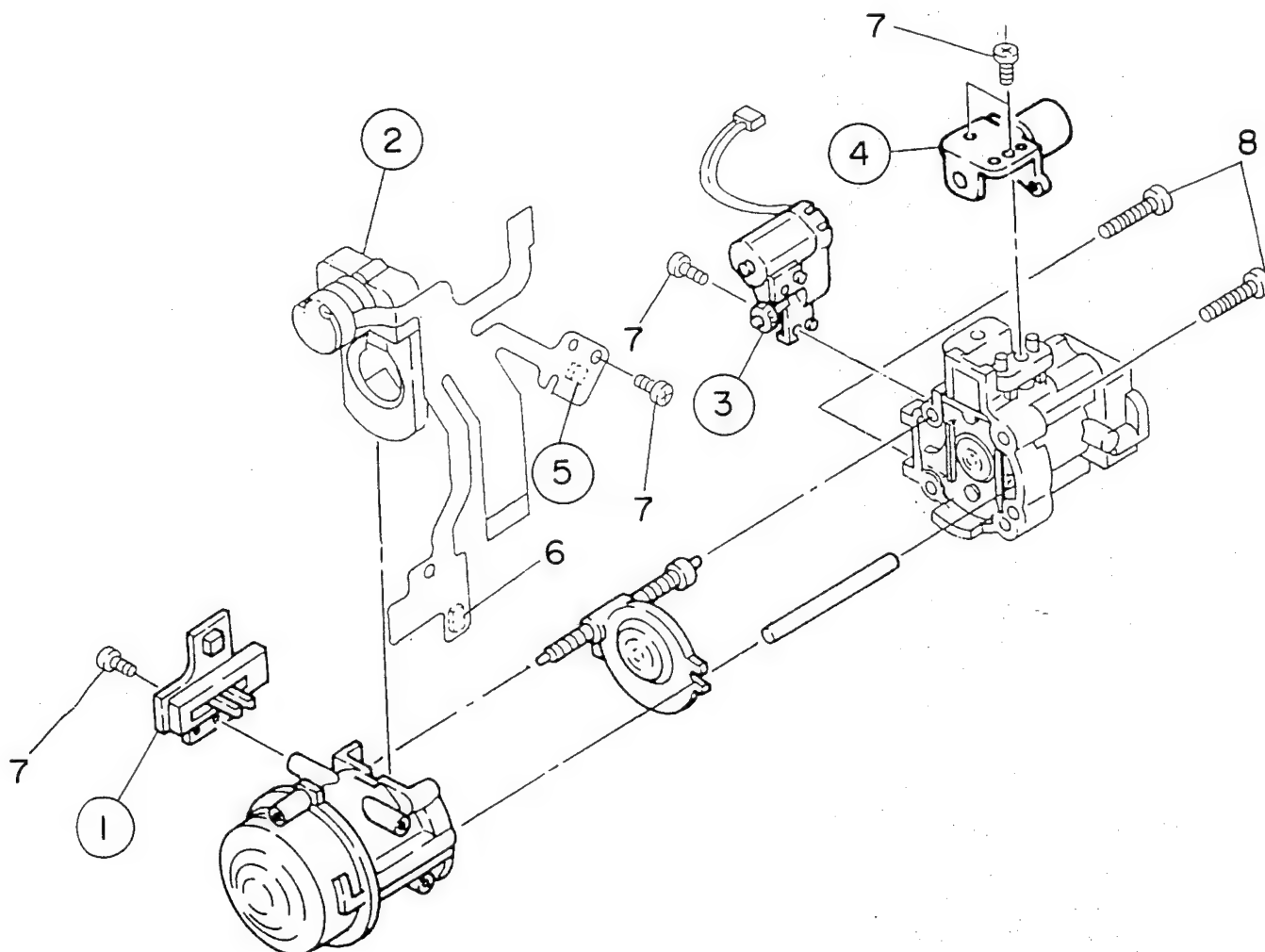
Ref.No.	Part No.	Description
1	EA-409984J	PC FLEX MACHA
2	EI-410216J	DETECTOR SPI-315-44 B.C
3	ED-410215J	D LED GL453 INFRARED
4	MZ-406914J	HOLDER LED
5	ET-410217J	TR PHOTO PT4810F
6	MZ-406911J	HOLDER SENSER (S)
7	MZ-406913J	HOLDER SENSER (T)
8	ES-408905J	SW MODE SELECT MMS00140ZZB0
9	ES-408906J	SW MICRO MPU30020MMB0
10	ES-408907J	SW MICRO MPU20110MMB0
11	ES-410531J	SW MICRO MPU10130MMB0
12	ZS-409993J	BT PAN17X035STL N/3 PS1
13	ML-406938J	PLATE SLIDER PART
14	ML-406930J	LEVER EJECT PART
15	ZW-390450J	SLIT W12X035X025 PSL
16	ZG-406933J	SP PULL LEVER EJECT
17	ZS-409930J	PAN14X025STL BZN PS SPECIAL
18	MZ-406815J	GEAR BELT (1) PART
19	MZ-406818J	GEAR BELT (2) PART
20	MB-406821J	BELT SYNCHRO
21	ML-406935J	LEVER CAM PINCH PART
22	MZ-406922J	SLIDER RING
23	MZ-406926J1	HOLDER RING
24	MZ-406919J	GEAR LOADING (1)
25	ZG-406921J	SP TORSION LOADING
26	MZ-406920J	GEAR LOADING (2)
27	MZ-406927J	PLATE GEAR PART
28	ZW-409995J	PW13X035X025PSL
29	MT-406801J	REEL (S) PART
30	MT-406813J	REEL (T) PART
31	MI-406823J	IDLER PART
32	MZ-406887J	GUIDE BRAKE
33	ML-406944J	LEVER SLIDER PART
34	ML-406940J1	ARM BRAKE PART
35	ZG-406943J	SP PULL BRAKE
36	MZ-410902J	GEAR WHEEL (1) PART
37	MZ-406915J	GEAR CAM CENTER
38	MZ-406918J	GEAR TOGGLE
39	ZG-406925J	SP TORSION LEVER TOGGLE
40	ML-406924J	LEVER TOGGLE
41	MZ-406917J	GEAR RELAY
42	MZ-406886J	GUIDE RAIL (T)
44	MR-406834J2	ROLLER Z PART
45	ML-406830J1	LEVER Z ROLLER PART
46	ZW-409988J	SLIT W10X024X025 PSL
47	ZG-406837J	SP TORSION LEVER Z
48	MS-406881J	GUIDE RAIL (S) PART
49	MS-409943J1	GUIDE (1)
50	ZS-409996J	N14BRS N/3 SPL
51	ZG-406885J	SP PUSH TAPE GUIDE
52	BV-V3013A070A	LEADER (S) BLK PV-MS8
53	ZS-409991J	6SET14X020SAE FP
54	VT-409944J	GUIDE ROLLER PART
55	ZS-412012J	PAN14X016STL CMT PS SPL
56	BV-V3013A080A	LEADER (T) BLK PV-MS8
57	MR-413413J	GUIDE ROLLER (2) PART
58	MP-V3013A100A	PINCH ROLLER BLK PV-MS8
59	ML-406864J1	ARM REVIW PART
60	MS-406871J	GUIDE REVIW
61	ZG-406869J	SP PUSH REVIW
62	ZG-406870J	SP TORSION REVIW
63	BM-410228J	MOTOR SCE-0301A
64	MZ-406872J	HOLDER TAPE GUIDE PART
65	MR-406880J	ROLLER TAPE GUIDE
69	EX-404488J	DEW SENSOR EYH-S78D3
70	BL-V3013A120A	TENSION BLK PV-MS8
71	ML-406838J	LEVER TENSION PART
72	MZ-406845J	SHEET TENSION PART
73	ZG-406849J1	SP PULL TENSION
74	BV-V3013A130A	LOADING MOTOR BLK PV-MS8
75	BM-410229J	MOTOR GM01
76	BV-V3013A200A	EJECTOR BLK PV-MS8
77	MZ-408878J	DUMPER Y18246-00800
78	MZ-411270J	STOPPER CASSETTE (S)
79	ZW-387492J	SLIT W21X040X050PSL
80	ZW-412011J	SLIT W08X030X025 PSL
81	BB-V3013A020A	MECHA DECK BLK PV-MS8

#### NOTE:

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.



## LENS BLOCK



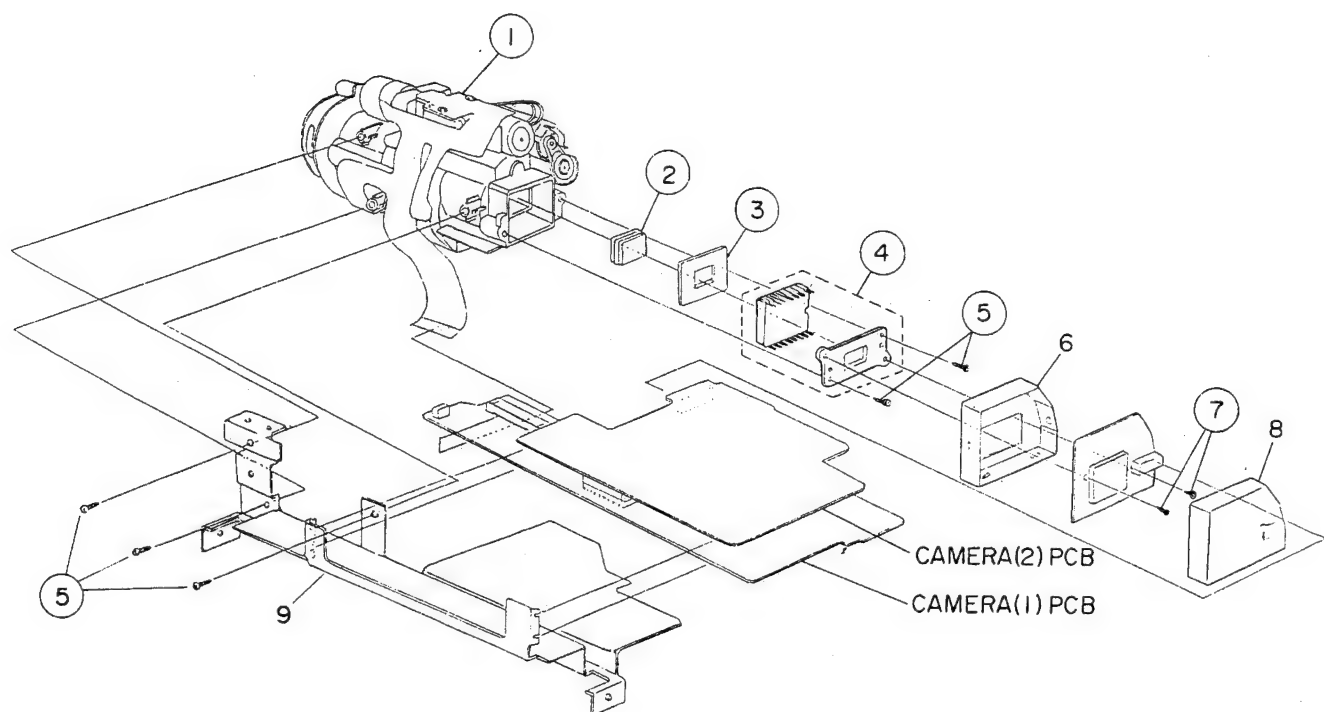
### 4. LENS BLOCK

Ref.No.	Part No.	Description
1	VC-733283J	ZOOM ENCORDER
2	VC-733284J	IG METER ASSY
3	BM-733285J	PZ MOTOR ASSY
4	BM-733286J	AF MOTOR ASSY
5	ET-733287J	DETECTOR ON-1004

#### NOTE:

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

## CAMERA BLOCK



## 5. CAMERA BLOCK

Ref.No.	Part No.	Description
1	BO-410212J	ZOOM LENS G38C
2	VC-410213J	FILTER X'TAL SV-511B
3	MB-409759J	RUBBER SEAL
4	EI-409981J	PLATE CCD M2 PART (CCD IC)
5	ZS-409970J	BT PAN17X04STL BZN PS1
7	ZS-374452	PAN17X03STL BZN PS1

### NOTE:

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

## 6. P.C BOARD BLOCK

Ref.No.	Part No.	Description
1A	BA-733301J	PC MAIN BLK PV-M2
1B	BA-733302J	PC MAIN BLK PV-M4
2A	BA-733303J	PC PRE AMP BLK PV-M2
2B	BA-733304J	PC PRE AMP BLK PV-M4
3A	BA-733305J	PC MIC AMP BLK PV-M2
3B	BA-733306J	PC MIC AMP BLK PV-M4
4A	BA-733307J	PC CAMERA (1) BLK PV-M2
4B	BA-733308J	PC CAMERA (1) BLK PV-M4
5A	BA-733309J	PC CAMERA (2) BLK PV-M2
5B	BA-733310J	PC CAMERA (2) BLK PV-M4
6A	BA-733311J	PC CCD BLK PV-M2
6B	BA-733312J	PC CCD BLK PV-M4
7A	BA-733313J	PC POWER SUPPLY BLK PV-M2
7B	BA-733314J	PC POWER SUPPLY BLK PV-M4

## 7. MAIN P.C BOARD

Ref.No.	Part No.	Description
D1	ED-386025J	D SILICON CHIP DAN202U
D2	ED-412061J	D SILICON CHIP MA147
D4	ED-386031J	D SILICON CHIP MA110-TW
D5	ED-386031J	D SILICON CHIP MA110-TW
D6	ED-386031J	D SILICON CHIP MA110-TW
D7	ED-386031J	D SILICON CHIP MA110-TW
D8	ED-386025J	D SILICON CHIP DAN202U
D9	ED-386031J	D SILICON CHIP MA110-TW
D10	ED-386025J	D SILICON CHIP DAN202U
D301	ED-404060J	D ZENER CHIP MA3075-L TW
D302	ED-408518J	D SILICON CHIP DA221
D303	ED-408518J	D SILICON CHIP DA221
D501	ED-412092J	D SILICON CHIP MA717
D701	ED-386031J	D SILICON CHIP MA110-TW
D702	ED-404449J	D SILICON CHIP MA132WK
D703	ED-404449J	D SILICON CHIP MA132WK
D704	ED-404449J	D SILICON CHIP MA132WK
D705	ED-404449J	D SILICON CHIP MA132WK
D706	ED-404449J	D SILICON CHIP MA132WK
D707	ED-404449J	D SILICON CHIP MA132WK
D708	ED-404449J	D SILICON CHIP MA132WK
D709	ED-404449J	D SILICON CHIP MA132WK
FL1	EH-408871J	FILTER LC C.TH354LAI-6047
FL2	EH-408872J	FILTER LC C.TH355LNK-6045
FL3	EH-408873J	FILTER LC C.H355LNK-4602
FL4	EH-408874J	FILTER LC C.H356LDM-4665
FL201	EH-410178J	FILTER CE SFSL5.17MDB
FL202	EH-412155J	FILTER LC CHIP A353TCH-6353
FL203	EH-404440J	FILTER LC CHIP RZV-36RN
FL501	EH-408559J	FILTER LC CHIP 4165 1.5MBPF
FL502	EH-408560J	FILTER LC CHIP 3786 1.7MBPF
IC1	EI-408571J	IC CXA1207AR
IC2	EI-408572J	IC CXL1506M
IC3	EI-410448J	IC MM1117XFF
IC4	EI-410449J	IC MM1118XFF
IC6	EI-410452J	IC SC00314S66FER
IC8	EI-410179J	IC BA225F-T1
IC9	EI-404464J	IC TC7W08F
IC201	EI-408574J	IC CXA1208R
IC202	EI-408628J	IC TL8811F
IC203	EI-408383J	IC UPD6451AGT-819
IC204	EI-408629J	IC TC4W53F
IC205	EI-408629J	IC TC4W53F
IC301	EI-408522J	IC CXA1204Q
IC302	EI-414543J	IC LA6324NM
IC303	EI-408520J2	IC UPD78136GF-026-3B9 EMZSYP3
IC304	EI-403658J	IC LB1830M
IC305	EI-408612J	IC NBC5800
IC306	EI-414543J	IC LA6324NM
IC307	EI-408523J	IC LB1851M
IC501	EI-408556J	IC CXA1488R
IC502	EI-408556J	IC CXA1488R
		[PV-M4/F]
IC503	EI-408557J	IC CXA1536Q
		[PV-M4/F]
IC701	EI-408540J2	IC M37471M8-224FP EMZOPP2
IC702	EI-408541J	IC S-8420BF
J15	EJ-412028J	SOCKET C.52365-1890 18P
P5	EJ-408544J	PLUG C.52204-2490 24P

Ref. No.	Part No.	Description
P17	EJ-408621J	PLUG C.52396-1290 12P
P307	EJ-404451J	PLUG C.52204-1090 10P
P308	EJ-412003J	PLUG C.52396-1890 18P
P309	EJ-412032J	PLUG C.53268-2290 22P
P501	EJ-403624J	PLUG C.53261-0490 4P
P710	EJ-408545J	PLUG C.52207-1290 12P
P711	EJ-408544J	PLUG C.52204-2490 24P
TR1	ET-408616J	TR CHIP 2SB1462 R.S
TR2	ET-408617J	TR CHIP 2SD2216 R.S
TR3	ET-408617J	TR CHIP 2SD2216 R.S
TR4	ET-408617J	TR CHIP 2SD2216 R.S
TR5	ET-408617J	TR CHIP 2SD2216 R.S
TR6	ET-408884J	TR CHIP UN9215
TR7	ET-408617J	TR CHIP 2SD2216 R.S
TR8	ET-408617J	TR CHIP 2SD2216 R.S
TR9	ET-408886J	TR CHIP UN9213
TR10	ET-386030J	TR CHIP 2SC4081 R.S
TR11	ET-408616J	TR CHIP 2SB1462 R.S
TR12	ET-408617J	TR CHIP 2SD2216 R.S
TR13	ET-408616J	TR CHIP 2SB1462 R.S
TR14	ET-408617J	TR CHIP 2SD2216 R.S
TR15	ET-408617J	TR CHIP 2SD2216 R.S
TR16	ET-386030J	TR CHIP 2SC4081 R.S
TR20	ET-404462J	TR CHIP UN9211
TR21	ET-404465J	TR CHIP UN921D
TR23	ET-408617J	TR CHIP 2SD2216 R.S
TR24	ET-408617J	TR CHIP 2SD2216 R.S
TR25	ET-408879J	TR CHIP UN9111
TR26	ET-408886J	TR CHIP UN9213
TR27	ET-408617J	TR CHIP 2SD2216 R.S
TR28	ET-408617J	TR CHIP 2SD2216 R.S
TR29	ET-408617J	TR CHIP 2SD2216 R.S
TR30	ET-408617J	TR CHIP 2SD2216 R.S
TR31	ET-408886J	TR CHIP UN9213
TR32	ET-408879J	TR CHIP UN9111
TR33	ET-408617J	TR CHIP 2SD2216 R.S
TR34	ET-408617J	TR CHIP 2SD2216 R.S
TR35	ET-408617J	TR CHIP 2SD2216 R.S
TR36	ET-386027J	TR CHIP 2SA1576 R.S
TR37	ET-386028J	TR CHIP 2SB815 B6 TAT08E
TR38	ET-408886J	TR CHIP UN9213
TR39	ET-386028J	TR CHIP 2SB815 B6 TAT08E
TR40	ET-408617J	TR CHIP 2SD2216 R.S
TR41	ET-408617J	TR CHIP 2SD2216 R.S
TR42	ET-408886J	TR CHIP UN9213
TR43	ET-408616J	TR CHIP 2SB1462 R.S
TR44	ET-408616J	TR CHIP 2SB1462 R.S
TR45	ET-408884J	TR CHIP UN9215
TR47	ET-408616J	TR CHIP 2SB1462 R.S
TR49	ET-408886J	TR CHIP UN9213
TR51	ET-408879J	TR CHIP UN9111
TR52	ET-408886J	TR CHIP UN9213
TR53	ET-408617J	TR CHIP 2SD2216 R.S
TR54	ET-408886J	TR CHIP UN9213
TR201	ET-408617J	TR CHIP 2SD2216 R.S
TR202	ET-408616J	TR CHIP 2SB1462 R.S
TR204	ET-408617J	TR CHIP 2SD2216 R.S
TR205	ET-408617J	TR CHIP 2SD2216 R.S
TR206	ET-408617J	TR CHIP 2SD2216 R.S
TR207	ET-408616J	TR CHIP 2SB1462 R.S
TR208	ET-408616J	TR CHIP 2SB1462 R.S
TR209	ET-408617J	TR CHIP 2SD2216 R.S
TR210	ET-408616J	TR CHIP 2SB1462 R.S
TR211	ET-408617J	TR CHIP 2SD2216 R.S
TR216	ET-408617J	TR CHIP 2SD2216 R.S
TR217	ET-408616J	TR CHIP 2SB1462 R.S
TR218	ET-408617J	TR CHIP 2SD2216 R.S
TR219	ET-408617J	TR CHIP 2SD2216 R.S
TR221	ET-386027J	TR CHIP 2SA1576 R.S
TR222	ET-408886J	TR CHIP UN9213
TR223	ET-408616J	TR CHIP 2SB1462 R.S
TR224	ET-408617J	TR CHIP 2SD2216 R.S
TR225	ET-408880J	TR CHIP UN9115
TR301	ET-408616J	TR CHIP 2SB1462 R.S
TR302	ET-410241J	TR D-CHIP XP4601 TWT08E
TR303	ET-404454J	TR D-CHIP XP4312 TWT08E
TR306	ET-386029J	TR CHIP 2SB1121 T
TR307	ET-386029J	TR CHIP 2SB1121 T
TR308	ET-386029J	TR CHIP 2SB1121 T
TR309	ET-386029J	TR CHIP 2SB1121 T
TR310	ET-408616J	TR CHIP 2SB1462 R.S
TR311	ET-408886J	TR CHIP UN9213

Ref. No.	Part No.	Description
TR501	ET-386030J	TR CHIP 2SC4081 R,S
TR502	ET-386030J	TR CHIP 2SC4081 R,S
TR503	ET-386030J	TR CHIP 2SC4081 R,S
TR504	ET-386030J	TR CHIP 2SC4081 R,S [PV-M4/F]
TR505	ET-408616J	TR CHIP 2SB1462 R,S [PV-M4/F]
TR506	ET-386030J	TR CHIP 2SC4081 R,S [PV-M4/F]
TR507	ET-386030J	TR CHIP 2SC4081 R,S [PV-M4/F]
TR508	ET-386030J	TR CHIP 2SC4081 R,S [PV-M4/F]
TR509	ET-386030J	TR CHIP 2SC4081 R,S
TR512	ET-408886J	TR CHIP UN9213 [PV-M4/F]
TR513	ET-408886J	TR CHIP UN9213 [PV-M4/F]
TR514	ET-408883J	TR CHIP UN9113 [PV-M4/F]
VR1	EV-404156J	R S-FIX C. T08 TMC3KTR 472
VR2	EV-404151J	R S-FIX C. T08 TMC3KTR 222
VR3	EV-408596J	R S-FIX C. T08 TMC3KTR 223
VR4	EV-404153J	R S-FIX C. T08 TMC3KTR 473
VR5	EV-406700J	R S-FIX C. T08 TMC3KTR 102
VR6	EV-404153J	R S-FIX C. T08 TMC3KTR 473
VR7	EV-406700J	R S-FIX C. T08 TMC3KTR 102
VR8	EV-404151J	R S-FIX C. T08 TMC3KTR 222
VR9	EV-406700J	R S-FIX C. T08 TMC3KTR 102
VR10	EV-404150J	R S-FIX C. T08 TMC3KTR 103
VR11	EV-408596J	R S-FIX C. T08 TMC3KTR 223
VR203	EV-408570J	R S-FIX C. T08 TMC3KTR 682
VR204	EV-404156J	R S-FIX C. T08 TMC3KTR 472
VR205	EV-404156J	R S-FIX C. T08 TMC3KTR 472
VR501	EV-404150J	R S-FIX C. T08 TMC3KTR 103
VR502	EV-404150J	R S-FIX C. T08 TMC3KTR 103
VR503	EV-404150J	R S-FIX C. T08 TMC3KTR 103 [PV-M4/F]
VR504	EV-404150J	R S-FIX C. T08 TMC3KTR 103 [PV-M4/F]
X201	EI-404438J	OSC X,TAL C.SMD-49 4.433619MHZ
X301	EI-408530J	OSC X,TAL C.CX-5F 5.85938MHZ
X302	EI-408529J	OSC X,TAL C.CX-5F 12.000MHZ
X701	EI-368825M	OSC X'TAL C-002RX 32.768KHZ
X702	EI-408543J	OSC CE CHIP FAR-C4CD04000-M20R

## 8. PRE AMP P.C BOARD

Ref.No.	Part No.	Description
D901	ED-386031J	D SILICON CHIP MA110-TW
IC901	EI-412017J	IC HA118041MP-ER
P915	EJ-412025J	PLUG C.53268-1890 18P
TR901	ET-408616J	TR CHIP 2SB1462 R,S
TR902	ET-408616J	TR CHIP 2SB1462 R,S
TR903	ET-408617J	TR CHIP 2SD2216 R,S
TR904	ET-408617J	TR CHIP 2SD2216 R,S
TR905	ET-408880J	TR CHIP UN9115
TR906	ET-408886J	TR CHIP UN9213
TR907	ET-408617J	TR CHIP 2SD2216 R,S
TR908	ET-408617J	TR CHIP 2SD2216 R,S
TR909	ET-408617J	TR CHIP 2SD2216 R,S
TR910	ET-408617J	TR CHIP 2SD2216 R,S
TR911	ET-408617J	TR CHIP 2SD2216 R,S
TR912	ET-408617J	TR CHIP 2SD2216 R,S
TR913	ET-408883J	TR CHIP UN9113
TR914	ET-408617J	TR CHIP 2SD2216 R,S
TR915	ET-404465J	TR CHIP UN921D
TR916	ET-408617J	TR CHIP 2SD2216 R,S
TR917	ET-408880J	TR CHIP UN9115 [PV-M4/F]
TR918	ET-408617J	TR CHIP 2SD2216 R,S

## 9. MIC AMP P.C BOARD

Ref.No.	Part No.	Description
TR651	ET-410241J	TR D-CHIP XP4601 TWT08E
TR652	ET-410239J	TR D-CHIP XP4401 TWT08E
TR653	ET-410422J	TR FET CHIP 2SK1332-3 TLT08E
TR654	ET-408617J	TR CHIP 2SD2216 R,S
TR655	ET-410239J	TR D-CHIP XP4401 TWT08E
TR656	ET-386030J	TR CHIP 2SC4081 R,S
TR661	ET-410241J	TR D-CHIP XP4601 TWT08E [PV-M4/F]
TR662	ET-410239J	TR D-CHIP XP4401 TWT08E [PV-M4/F]
TR663	ET-410422J	TR FET CHIP 2SK1332-3 TLT08E [PV-M4/F]
TR664	ET-408617J	TR CHIP 2SD2216 R,S [PV-M4/F]
TR665	ET-410239J	TR D-CHIP XP4401 TWT08E [PV-M4/F]
TR666	ET-386030J	TR CHIP 2SC4081 R,S [PV-M4/F]

## 10. CAMERA (1) P.C BOARD

Ref.No.	Part No.	Description
D301	ED-408555J	D SOHOTTKY CHIP U1GWJ49
D302	ED-408555J	D SOHOTTKY CHIP U1GWJ49
D303	ED-408555J	D SOHOTTKY CHIP U1GWJ49
D304	ED-408555J	D SOHOTTKY CHIP U1GWJ49
D306	ED-386024J	D SILICON CHIP DA204U
D307	ED-410589J	D LED C.C.L180URCTS RED T08E
IC301	EI-408550J	IC CXD1172AM-T3
IC302	EI-403658J	IC LB1830M
IC303	EI-408551J	IC TB6504F-EL
IC304	EI-410133J	IC AN1324NS
IC305	EI-410133J	IC AN1324NS
IC308	EI-408552J	IC MB636128 DAF02-FSY
IC309	EI-408501J	IC M37451M8-224FP EMZCMR2
IC310	EI-410169J	IC ST24C02AM1013TR
IC311	EI-410137J	IC MC74HC02AFR
IC312	EI-410134J	IC AN1393S
IC313	EI-410136J	IC MC74HC4002FR
IC314	EI-410132J	IC AN1339S
IC315	EI-410131J	IC MC34074DR
IC316	EI-410135J	IC MC74HC4066FR
J302	EJ-408592J	SOCKET C.CPB8518-0151 18P T24E
J303	EJ-408592J	SOCKET C.CPB8518-0151 18P T24E
P304	EJ-412039J	PLUG C.52396-2090 20P
P305	EJ-408513J	PLUG C.52396-2490 24P
P306	EJ-412102J	PLUG C.53261-1290 12P
TR301	ET-408617J	TR CHIP 2SD2216 R,S
TR304	ET-408617J	TR CHIP 2SD2216 R,S
TR305	ET-408617J	TR CHIP 2SD2216 R,S
TR306	ET-410240J	TR D-CHIP XP4501 TWT08E
TR307	ET-410241J	TR D-CHIP XP4601 TWT08E
TR310	ET-408616J	TR CHIP 2SB1462 R,S
TR311	ET-408886J	TR CHIP UN9213
TR313	ET-408880J	TR CHIP UN9115
TR314	ET-408886J	TR CHIP UN9213
TR315	ET-410241J	TR D-CHIP XP4601 TWT08E
TR319	ET-408617J	TR CHIP 2SD2216 R,S
TR320	ET-408617J	TR CHIP 2SD2216 R,S
TR324	ET-408617J	TR CHIP 2SD2216 R,S
TR325	ET-403663J	TR CHIP DTC124TU
TR326	ET-403804J	TR CHIP DTC124EE
VR301	EV-404158J	R S-FIX C. T08 TMC3KTR 104
X302	EI-408517J	OSC CE CHIP FAR-C4CD12000M02-R

## 11. CAMERA (2) P.C BOARD

Ref.No.	Part No.	Description
D101	ED-394636J	D VARACTOR CHIP 1SV200
D102	ED-405339J	D SILICON CHIP DA115
FL101	EH-405601J	FILTER LC CHIP RXV-5YCN
FL102	EH-403826J	FILTER LC CHIP RZV-25QN
IC101	EI-386023J	IC AN1358S-T1
IC102	EI-408507J	IC AN2145FHP
IC103	EI-403502J	IC MN3820S
IC104	EI-403580J	IC AN2457SB
IC105A	EI-403505J	IC M62352GP [PV-M2/F]
IC105B	EI-405377J	IC MB88346APFV EF [PV-M4/F]
IC106A	EI-403505J	IC M62352GP [PV-M2/F]
IC106B	EI-405377J	IC MB88346APFV EF [PV-M4/F]
IC107	EI-410131J	IC MC34074DR
IC108	EI-386023J	IC AN1358S-T1
IC109	EI-410172J	IC MN5151H
IC110	EI-401280J	IC MN73033XRA
IC111	EI-403519J	IC AN2012SB
IC112	EI-410139J	IC SC7S04FER
IC113	EI-410138J	IC SC14571FER
P101	EJ-412025J	PLUG C.53268-1890 18P
P102	EJ-408593J	PLUG C.CPB8618-0151 18P T24E
P103	EJ-408593J	PLUG C.CPB8618-0151 18P T24E
P128	EJ-403630J	PLUG C.53263-1490 14P
TR101	ET-410241J	TR D-CHIP XP4601 TWT08E
TR102	ET-408617J	TR CHIP 2SD2216 R.S
TR103	ET-408616J	TR CHIP 2SB1462 R.S
TR104	ET-403561J	TR CHIP 2SC4617 R
TR105	ET-408617J	TR CHIP 2SD2216 R.S
TR106	ET-408617J	TR CHIP 2SD2216 R.S
TR107	ET-410239J	TR D-CHIP XP4401 TWT08E
TR108	ET-408617J	TR CHIP 2SD2216 R.S
TR109	ET-408617J	TR CHIP 2SD2216 R.S
TR110	ET-408617J	TR CHIP 2SD2216 R.S
TR111	ET-408617J	TR CHIP 2SD2216 R.S
TR112	ET-410240J	TR D-CHIP XP4501 TWT08E
TR113	ET-408617J	TR CHIP 2SD2216 R.S
TR114	ET-410241J	TR D-CHIP XP4601 TWT08E
TR115	ET-408616J	TR CHIP 2SB1462 R.S
TR116	ET-408616J	TR CHIP 2SB1462 R.S
TR117	ET-408616J	TR CHIP 2SB1462 R.S
TR120	ET-403559J	TR D-CHIP UMW1
VC101	EC-408476J	C S-FIX CHIP T12 TZBX4P300AA
X101	EI-410175J	OSC X,TAL C.JXO-3F 19.3125MHZ
X102	EI-410176J	OSC X,TAL C.CX49F 17734.475KHZ

## 12. CCD P.C BOARD

Ref.No.	Part No.	Description
D1	ED-405339J	D SILICON CHIP DA115
D2	ED-405339J	D SILICON CHIP DA115
IC1	EI-410627J	IC UPD16506GR-8JG
J1	EJ-403813J	SOCKET C.52357-1890 18P
J2	EJ-403642J	SOCKET C.DICC-C16A1-SM1 [CCD SOCKET]
TR1	ET-408616J	TR CHIP 2SB1462 R.S
TR2	ET-408617J	TR CHIP 2SD2216 R.S
TR4	ET-408617J	TR CHIP 2SD2216 R.S
TR5	ET-403561J	TR CHIP 2SC4617 R

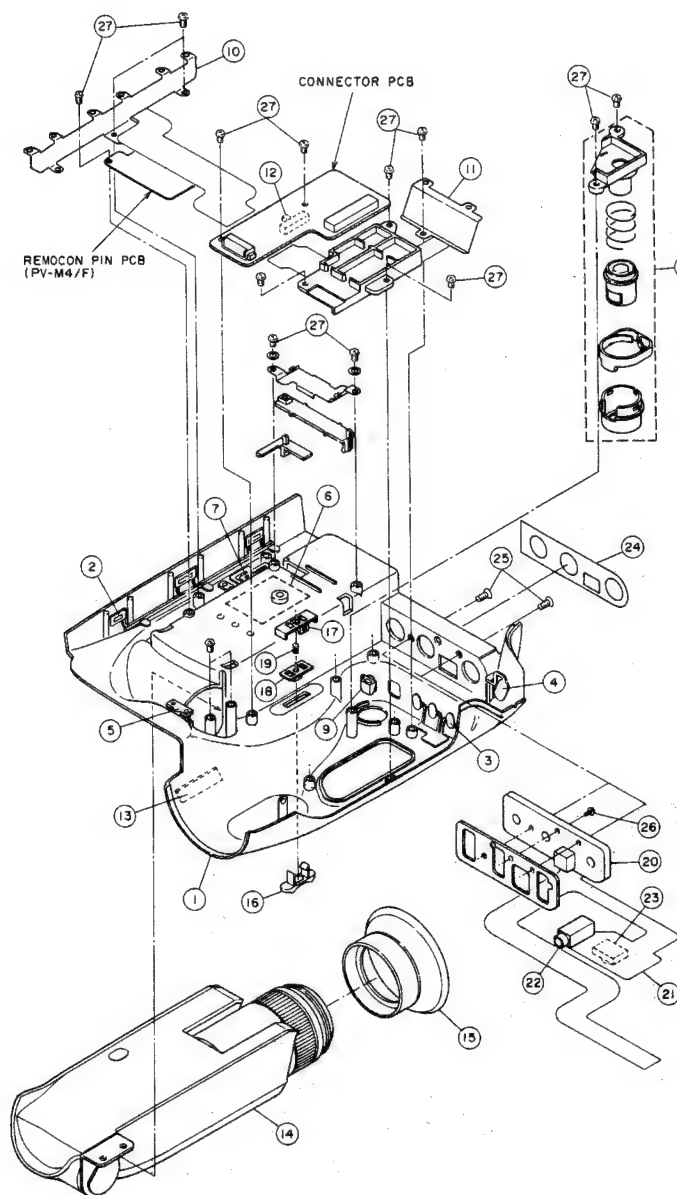
## 13. POWER SUPPLY P.C BOARD

Ref.No.	Part No.	Description
D701	ED-380715J	D SILICON ERB83-004 40/1.7A
D702	ED-408555J	D SOHOTTKY CHIP U1GWJ49
D703	ED-408555J	D SOHOTTKY CHIP U1GWJ49
D704	ED-389579J	D SILICON CHIP RB400D
D705	ED-389579J	D SILICON CHIP RB400D
D706	ED-408555J	D SOHOTTKY CHIP U1GWJ49
D707	ED-389578J	D SILICON CHIP RB451F T106T08E
D709	ED-392394J	D ZENER CHIP MA3039-H TW
D710	ED-386031J	D SILICON CHIP MA110-TW
D711	ED-408555J	D SOHOTTKY CHIP U1GWJ49
D731	ED-410246J	D LED C.BR1102W RED TRT08E
D732	ED-410245J	D LED C.PG1102W GREEN TRT08E
F701	*EF-410226J	FUSE C.SSFC 125V 3.15A T12E
IC701	EI-408534J	IC MB3778PFV
IC702	EI-408534J	IC MB3778PFV
J701	EJ-408599J	SOCKET INLET HEC3600-01-110 [DC JACK]
J709	EJ-412027J	SOCKET C.52365-2290 22P
L701	EO-410197J	COILFIX CHIP CI-6 T12 220M
L702	EO-410197J	COILFIX CHIP CI-6 T12 220M
L703	EO-410197J	COILFIX CHIP CI-6 T12 220M
L704	EO-410198J	COILFIX CHIP CF-8S T16 220M
L705	EO-410197J	COILFIX CHIP CI-6 T12 220M
L706	EO-403845J	COILFIX CHIP NLC453232T12 330K
L707	EO-410199J	COILFIX CHIP CF-8S T16 470M
L708	EO-390292J	COILFIX CHIP NLC322522T08 470K
L709	EO-390293J	COILFIX CHIP NLC322522T08 101K
L710	EO-390293J	COILFIX CHIP NLC322522T08 101K
L711	EO-410198J	COILFIX CHIP CF-8S T16 220M
L712	EO-410197J	COILFIX CHIP CI-6 T12 220M
SF701	*EF-404063J	FUSE ICP-F50 50V 2.0A
SF702	*EF-404063J	FUSE ICP-F50 50V 2.0A
SF703	*EF-404063J	FUSE ICP-F50 50V 2.0A
T701	*EO-408538J	COILFIX CHIP ELL-06T*****
TB701	EJ-408204J	TERMINAL BATTERY PART
TB702	EJ-408204J	TERMINAL BATTERY PART
TB703	EJ-408206J	TERMINAL (+)
TB704	EJ-403173J	TERMINAL (-)
TR701	ET-410433J	TR CHIP 2SB1124 S,T,U
TR702	ET-410433J	TR CHIP 2SB1124 S,T,U
TR704	ET-410433J	TR CHIP 2SB1124 S,T,U
TR705	ET-410433J	TR CHIP 2SB1124 S,T,U
TR707	ET-403851J	TR.CHIP 2SD2150 R.S
TR708	ET-408617J	TR CHIP 2SD2216 R.S
TR709	ET-386028J	TR CHIP 2SB815 B6 TAT08E
TR710	ET-408617J	TR CHIP 2SD2216 R.S
TR711	ET-403851J	TR.CHIP 2SD2150 R.S
TR732	ET-408886J	TR CHIP UN9213
VR702	EV-404154J	R S-FIX C. T08 TMC3KTR 471
VR703	EV-404154J	R S-FIX C. T08 TMC3KTR 471

## 14. CONNECTOR P.C BOARD

Ref.No.	Part No.	Description
D101	ED-386031J	D SILICON CHIP MA110-TW
D102	ED-386024J	D SILICON CHIP DA204U
P111	EJ-408513J	PLUG C.52396-2490 24P
PH101	ET-410468J	DETECTOR GP1U561
SW101	ES-413067J	SW SLIDE SSSS81 01-03*
TR101	ET-386053J	TR CHIP DTA143EU
TR102	ET-386053J	TR CHIP DTA143EU
TR103	ET-410150J	TR CHIP 2SB1218A R.S
TR104	ET-405625J	TR CHIP 2SD1819A-TW R.S
TR105	ET-405625J	TR CHIP 2SD1819A-TW R.S

# UPPER CASE BLOCK



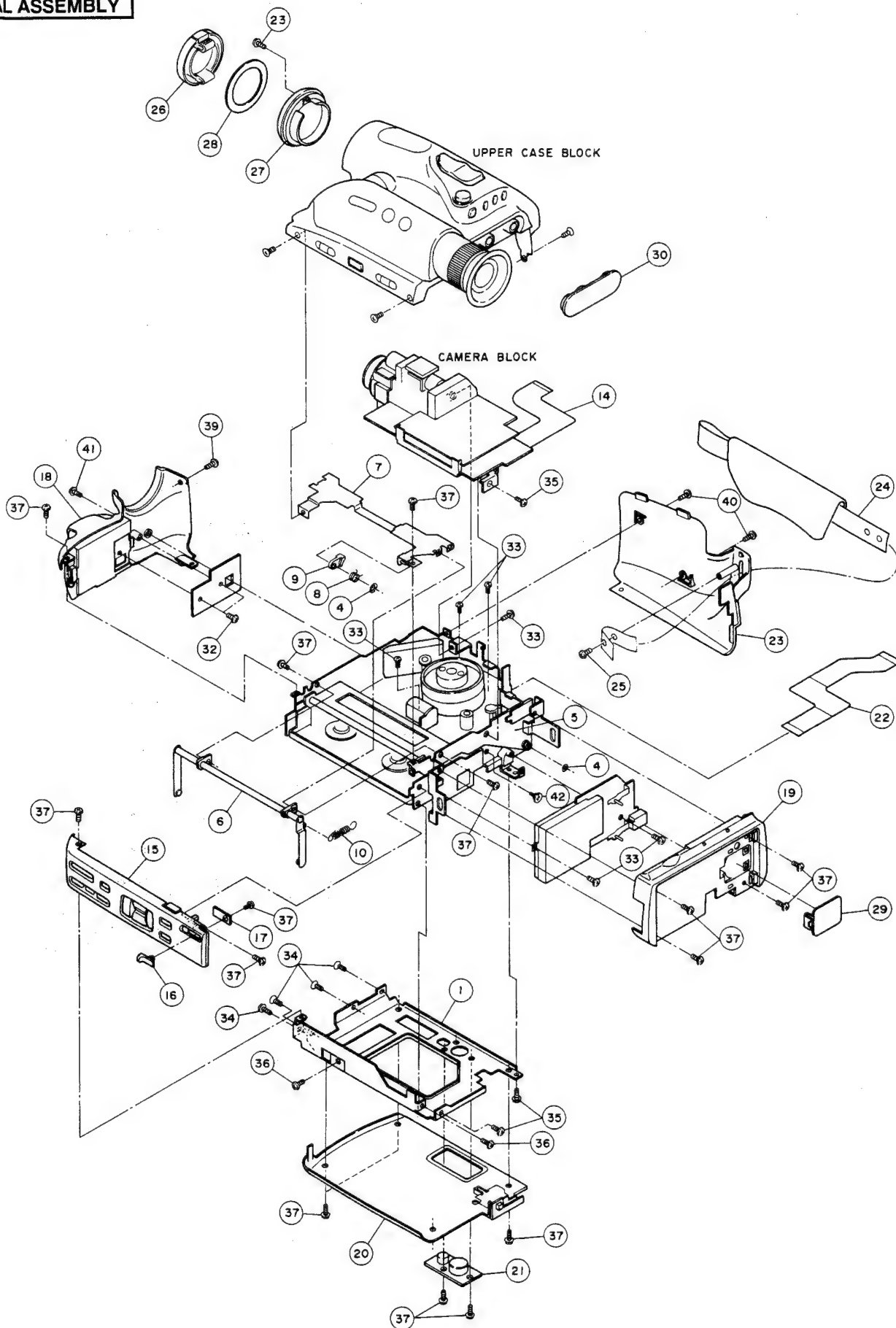
## 15. UPPER CASE BLOCK

Ref.No.	Part No.	Description
1A	SP-409789J	CASE UPPER M2
1B	SP-404408J	CASE UPPER M2F
1C	SP-409788J1	CASE UPPER M4
1D	SP-404407J1	CASE UPPER M4F
2	SK-409790J1	BUTTON SIDE
3	SK-409791J1	BUTTON REAR
4	SK-409793J	BUTTON REC
5	SZ-409794J	LENS LED (F)
6	SK-410860J	BUTTON OP PART
7A	SK-409795J	BUTTON REMOCON E
		[PV-M2/F]
7B	SK-404409J	BUTTON REMOCON F
		[PV-M4F]
8	SZ-413607J	HOLDER SENSER PART
		[PV-M4/F]
9	SK-409852J	BUTTON SENSER
		[PV-M4/F]
10A	ES-410235J	OPERATION H M2
		[PV-M2/F]
10B	ES-410234J	OPERATION H M4
		[PV-M4/F]
11	ES-410236J	OPERATION TW
12	ES-413067J	SW SLIDE SSSS81 01-03*
13	SM-410858J1	NAME PLATE AKAI M4-S
		[PV-M4/F]
14A	VC-V3013A330E	E.V.F BLK PV-M2
14B	VC-V3013A330F	E.V.F BLK PV-M2F
14C	VC-V3013A330C	E.V.F BLK PV-M4
14D	VC-V3013A330D	E.V.F BLK PV-M4F
15	ZS-409816J	CAP LENS VF
16	SK-409802J	KNOB POW
17	SZ-409804J	SLIDE POW
18	SK-409805J	BUTTON POW
19	ZG-409806J	SP PUSH POW
20A	EJ-410223J	JACK PLATE AV *M2
		[PV-M2/F]
20B	EJ-410222J	JACK PLATE AV *M4
		[PV-M4/F]
21	EA-404434J	PCB FLEXIBLE AV JACK
22	EJ-404433J	PHONE J 3P HSJ1424-01-500A 3.5
23	ES-403634J	SW TACT SKEYAB
24A	SE-404412J1	PLATE AV M2
		[PV-M2]
24B	SE-404413J1	PLATE AV M2F
		[PV-M2F]
24C	SE-404410J1	PLATE AV MS8
		[PV-M4]
24D	SE-404411J1	PLATE AV MS8F
		[PV-M4F]
25	ZS-412177J	CTS17X05STL BNI PS3
26	ZS-377198	PAN17X04STL BZN PS1
27	ZS-409970J	BT PAN17X04STL BZN PS1
28	EJ-408209J1	PLATE REMOCON PART
		[PV-M4/F,REMOCON PIN PCB]

### NOTE:

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

**FINAL ASSEMBLY**



## PARTS LIST



## 16. FINAL ASSEMBLY

Ref.No.	Part No.	Description
1	MZ-V3013A150A	COVER MECHA BLK PV-MS8
4	ZW-392226J	SLIT W16X040X050PSL
5	MZ-409827J	HOLDER LENS (1) PART
6	ML-409761J	LEVER MAIN PART
7	MZ-409771J	HOLDER LENS (3) PART
8	ZG-409863J	SP TORSION LEVER PRESS
9	ML-409774J	LEVER PRESS
10	ZG-409775J	SP PULL LEVER MAIN (L)
14	EA-410230J	PCB FLEXIBLE CAMERA MAIN
15A	ES-410219J	OPERATION A M2
15B	ES-404399J	OPERATION A M2F FRENCH
15C	ES-410221J	OPERATION A M4
15D	ES-404397J	OPERATION A M4F FRENCH
16	SK-409723J	KNOB OPEN
17	ML-409725J	SLIDE OPEN
18A	EY-410204J	MIC *M2
18B	EY-404401J	MIC M2F FRENCH
18C	EY-410203J	MIC M4
18D	EY-404404J	MIC M4F FRENCH
19A	SP-409731J1	CASE BATTERY M2
19B	SP-409730J1	CASE BATTERY M4
20A	BD-V3013A310C	CASE BOTTOM BLK PV-M2
20B	BD-V3013A310B	CASE BOTTOM BLK PV-M4
21	SZ-409733J	HOLDER STAND INSERT PART
22	EA-410233J	PCB FLEXIBLE OP MAIN
23A	SP-409833J1	CASE GRIP M2
23B	SP-409832J1	CASE GRIP M4
24	VC-410520J	BELT GRIP
25	ZS-404011J	BT PAN20X06STL BZN C070
26	VC-409840J	CAP LENS M2
27A	VC-409737J	HOOD LENS M2
27B	VC-409736J	HOOD LENS M4
28A	SE-409739J	PLATE LENS M2E
28B	SE-404419J	PLATE LENS M2F
29	SC-403178J1	COVER BATTERY
30	SC-409913J	CAP AV OUT
31	ZS-390458J	BT PAN17X03STL BZN
32	ZS-409964J	BT PAN17X03STL BZN PS1
33	ZS-409970J	BT PAN17X04STL BZN PS1
34	ZS-394280J	CTS17X02STL BZN PS1
35	ZS-412192J	PAN17X025STL BZN PS1
36	ZS-374452	PAN17X03STL BZN PS1
37	ZS-390433J	PAN17X03STL BZN PS3
38	ZS-412193J	PAN17X08STL BZN PS1
39	ZS-412196J	OCS17X03STL BZN PS3
40	ZS-412195J	OCS17X04STL BZN PS3
41	ZS-412197J	OCS17X08STL BZN PS3
42	ZS-409830J	M.SCREW CHASSIS

### NOTE:

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

## 17. ACCESSARY

Ref.No.	Part No.	Description
1A	AV-403702J	AV CABLE VW-300 [PV-M2]
1B	AV-403703J	AV CABLE VW-321 [PV-M2F]
1C	AV-410206J	AV CABLE VW-301 [PV-M4]
1D	AV-410207J	AV CABLE VW-322 [PV-M4F]
2	AV-403790J	CORD LLP0083-2000 DC-DC
3	AV-404396J	SHOULDER STRAP SB-101
5A	AV-B1045A010C	REMOCON BLK RC-M4 [PV-M4]
5B	AV-B1045A010D	REMOCON BLK RC-M4F [PV-M4F]

## 18. AC ADAPTOR UNIT (VA-300)

Ref.No.	Part No.	Description
C2	EC-733237J	C EC 470 400V
D1	ED-732853J	D SILICON S1WB (A) 60
D2	ED-371510	D SILICON ERA22-08Y F05
D3	ED-385935J	D SILICON ERA22-04V3 T26 400/5
D4	ED-733238J	D SILICON ERA15-01V
D5	ED-733239J	D SILICON 1SS133T-77
D21	ED-733246J	D SILICON ESAB92M-02
D22	ED-733247J	D SILICON ERC81-004L7
F1	EF-733244J	FUSE 250V 1A
IC21	EI-718598	IC AN8005
IC31	EI-386011J	IC BA10358F
IC51	EI-733260J	IC FA5307S
IC71	EI-733262J	IC HA012612S
JK	EJ-733256J	JACK DC LGP6501-0100
L1	EH-733241J	FILTER UF1922S4-153
L2	EH-733242J	FILTER YU41206
L21	EO-733254J	COIL SN5-1700
L22	EO-733255J	COIL HA31254A
L23	EO-733255J	COIL HA31254A
LED21	ED-733249J	D LED SLR-34VR
LED22	ED-725278J	D LED SLR-34MC70F GREEN
PHC1	ET-733252J	PHOTO COUPLER PC111LS
Q1	ET-733245J	TR FET 2SK951
Q21	ET-733251J	TR 2SB952
Q22	ET-382952J	TR DTC123ES
Q23	ET-370634	TR DTA143XS
Q71	ET-732638J	TR CHIP DTC144EK
SW1	ES-733257J	SW MICRO MSS-8-2
T1	BT-733243J	TRANS ETS22K867A
TF1	EF-733253J	FUSE THEERMO S3
VR21	EV-405657J	R S-FIX H T05 KVSF637T 0.1W103
X21	EI-382875J	OSC CE CST4.00MGW 4MHZ
ZD1	ED-724036J	D ZENER MTZJ27D
ZD2	ED-724036J	D ZENER MTZJ27D
ZD21	ED-717552	D ZENER H MA4051-M
ZD22	ED-733248J	D ZENER MTZJ5.6CT-77
1	BA-733293J	PC SUB (1) BLK
2	BA-733294J	PC SUB (2) BLK
3	*EW-733263J	AC CORD HL21254C (EG)
4	*EW-733264J	AC CORD HL21254D (EK)
5	*EW-733265J	AC CORD HL21254E (EA)

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Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.
AVB1045A010C	17-5A	ED404449J	7-D704	EI405377J	11-IC105B	EJ408544J	7-P5
AVB1045A010D	17-5B	ED404449J	7-D705	EI405377J	11-IC106B	EJ408544J	7-P711
AV403702J	17-1A	ED404449J	7-D706	EI408383J	7-IC203	EJ408545J	7-P710
AV403703J	17-1B	ED404449J	7-D707	EI408501J1	10-IC309	EJ408592J	10-J302
AV403790J	17-2	ED404449J	7-D708	EI408507J	11-IC102	EJ408592J	10-J303
AV404396J	17-3	ED404449J	7-D709	EI408517J	10-X302	EJ408593J	11-P102
AV410206J	17-1C	ED405339J	11-D102	EI408520J2	7-IC303	EJ408593J	11-P103
AV410207J	17-1D	ED405339J	12-D1	EI408522J	7-IC301	EJ408599J	13-J701
BA733293J	18-1	ED405339J	12-D2	EI408523J	7-IC307	EJ408621J	7-P17
BA733294J	18-2	ED408518J	7-D302	EI408529J	7-X302	EJ410222J	15-20B
BA733301J	6-1A	ED408518J	7-D303	EI408530J	7-X301	EJ410223J	15-20A
BA733302J	6-1B	ED408555J	10-D301	EI408534J	13-IC701	EJ412003J	7-P308
BA733303J	6-2A	ED408555J	10-D302	EI408534J	13-IC702	EJ412025J	8-P915
BA733304J	6-2B	ED408555J	10-D303	EI408540J1	7-IC701	EJ412025J	11-P101
BA733305J	6-3A	ED408555J	10-D304	EI408541J	7-IC702	EJ412027J	13-J709
BA733306J	6-3B	ED408555J	13-D702	EI408543J	7-X702	EJ412028J	7-J15
BA733307J	6-4A	ED408555J	13-D703	EI408550J	10-IC301	EJ412032J	7-P309
BA733308J	6-4B	ED408555J	13-D706	EI408551J	10-IC303	EJ412039J	10-P304
BA733309J	6-5A	ED408555J	13-D711	EI408552J1	10-IC308	EJ412102J	10-P306
BA733310J	6-5B	ED410215J	3-3	EI408556J	7-IC501	EJ733256J	18-JK
BA733311J	6-6A	ED410245J	13-D732	EI408556J	7-IC502	EO390292J	13-L708
BA733312J	6-6B	ED410246J	13-D731	EI408557J	7-IC503	EO390293J	13-L709
BA733313J	6-7A	ED410589J	10-D307	EI408571J	7-IC1	EO390293J	13-L710
BA733314J	6-7B	ED412061J	7-D2	EI408572J	7-IC2	EO403845J	13-L706
BBV3013A020A	3-81	ED412092J	7-D501	EI408574J	7-IC201	EO408538J	13-T701
BDV3013A310B	16-20B	ED717552	18-ZD21	EI408612J	7-IC305	EO410197J	13-L701
BDV3013A310C	16-20A	ED724036J	18-ZD1	EI408628J	7-IC202	EO410197J	13-L702
BHV3013A400B	2-1	ED724036J	18-ZD2	EI408629J	7-IC204	EO410197J	13-L703
BLV3013A120A	3-70	ED725278J	18-LED22	EI408629J	7-IC205	EO410197J	13-L705
BM410228J	3-63	ED732853J	18-D1	EI409981J	5-4	EO410197J	13-L712
BM410229J	3-75	ED733238J	18-D4	EI410131J	10-IC315	EO410198J	13-L704
BM733285J	4-3	ED733239J	18-D5	EI410131J	11-IC107	EO410198J	13-L711
BM733286J	4-4	ED733246J	18-D21	EI410132J	10-IC314	EO410199J	13-L707
BO410212J	5-1	ED733247J	18-D22	EI410133J	10-IC304	EO733254J	18-L21
BT733243J	18-T1	ED733248J	18-ZD22	EI410133J	10-IC305	EO733255J	18-L22
BVV3013A070A	3-52	ED733249J	18-LED21	EI410134J	10-IC312	EO733255J	18-L23
BVV3013A080A	3-56	EF404063J	13-SF701	EI410135J	10-IC316	ES403634J	15-23
BVV3013A130A	3-74	EF404063J	13-SF702	EI410136J	10-IC313	ES404397J	16-15D
BVV3013A200A	3-76	EF404063J	13-SF703	EI410137J	10-IC311	ES404399J	16-15B
EA404434J	15-21	EF410226J	13-F701	EI410138J	11-IC113	ES408905J	3-8
EA409984J	3-1	EF733244J	18-F1	EI410139J	11-IC112	ES408906J	3-9
EA410230J	16-14	EF733253J	18-TF1	EI410169J	10-IC310	ES408907J	3-10
EA410233J	16-22	EH403826J	11-FL102	EI410172J	11-IC109	ES410219J	16-15A
EC408476J	11-VC101	EH404440J	7-FL203	EI410175J	11-X101	ES410221J	16-15C
EC733237J	18-C2	EH405601J	11-FL101	EI410176J	11-X102	ES410234J	15-10B
ED371510	18-D2	EH408559J	7-FL501	EI410179J	7-IC8	ES410235J	15-10A
ED380715J	13-D701	EH408560J	7-FL502	EI410216J	3-2	ES410236J	15-11
ED385935J	18-D3	EH408871J	7-FL1	EI410448J	7-IC3	ES410531J	3-11
ED386024J	10-D306	EH408872J	7-FL2	EI410449J	7-IC4	ES413067J	14-SW101
ED386024J	14-D102	EH408873J	7-FL3	EI410452J	7-IC6	ES413067J	15-12
ED386025J	7-D1	EH408874J	7-FL4	EI410627J	12-IC1	ES733257J	18-SW1
ED386025J	7-D8	EH410178J	7-FL201	EI412017J	8-IC901	ET370634	18-Q23
ED386025J	7-D10	EH412155J	7-FL202	EI414543J	7-IC302	ET382952J	18-Q22
ED386031J	7-D4	EH733241J	18-L1	EI414543J	7-IC306	ET386027J	7-TR36
ED386031J	7-D5	EH733242J	18-L2	EI718598	18-IC21	ET386027J	7-TR221
ED386031J	7-D6	EI368825M	7-X701	EI733260J	18-IC51	ET386028J	7-TR37
ED386031J	7-D7	EI382875J	18-X21	EI733262J	18-IC71	ET386028J	7-TR39
ED386031J	7-D9	EI386011J	18-IC31	EJ403173J	13-TB704	ET386028J	13-TR709
ED386031J	7-D701	EI386023J	11-IC101	EJ403624J	7-P501	ET386029J	7-TR306
ED386031J	8-D901	EI386023J	11-IC108	EJ403630J	11-P128	ET386029J	7-TR307
ED386031J	13-D710	EI401280J	11-IC110	EJ403642J	12-J2	ET386029J	7-TR308
ED386031J	14-D101	EI403502J	11-IC103	EJ403813J	12-J1	ET386029J	7-TR309
ED389578J	13-D707	EI403505J	11-IC105A	EJ404433J	15-22	ET386030J	7-TR10
ED389579J	13-D704	EI403505J	11-IC106A	EJ404451J	7-P307	ET386030J	7-TR16
ED389579J	13-D705	EI403519J	11-IC111	EJ408204J	13-TB701	ET386030J	7-TR501
ED392394J	13-D709	EI403580J	11-IC104	EJ408204J	13-TB702	ET386030J	7-TR502
ED394636J	11-D101	EI403658J	7-IC304	EJ408206J	13-TB703	ET386030J	7-TR503
ED404060J	7-D301	EI403658J	10-IC302	EJ408209J1	15-28	ET386030J	7-TR504
ED404449J	7-D702	EI404438J	7-X201	EJ408513J	10-P305	ET386030J	7-TR506
ED404449J	7-D703	EI404464J	7-IC9	EJ408513J	14-P111	ET386030J	7-TR507

Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.
ET386030J	7-TR508	ET408617J	7-TR218	ET410241J	7-TR302	MS406871J	3-60
ET386030J	7-TR509	ET408617J	7-TR219	ET410241J	9-TR651	MS406881J	3-48
ET386030J	9-TR656	ET408617J	7-TR224	ET410241J	9-TR661	MS409943J1	3-49
ET386030J	9-TR666	ET408617J	8-TR903	ET410241J	10-TR307	MT406801J	3-29
ET386053J	14-TR101	ET408617J	8-TR904	ET410241J	10-TR315	MT406813J	3-30
ET386053J	14-TR102	ET408617J	8-TR907	ET410241J	11-TR101	MZV3013A150A	16-1
ET403559J	11-TR120	ET408617J	8-TR908	ET410241J	11-TR114	MZ406815J	3-18
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ZS409816J	15-15						
ZS409830J	16-42						
ZS409930J	2-8						
ZS409930J	3-17						
ZS409964J	16-32						
ZS409970J	5-5						
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ZW390450J	3-15						
ZW392226J	16-4						
ZW409988J	3-46						
ZW409995J	3-28						
ZW412011J	3-80						

# AKAI

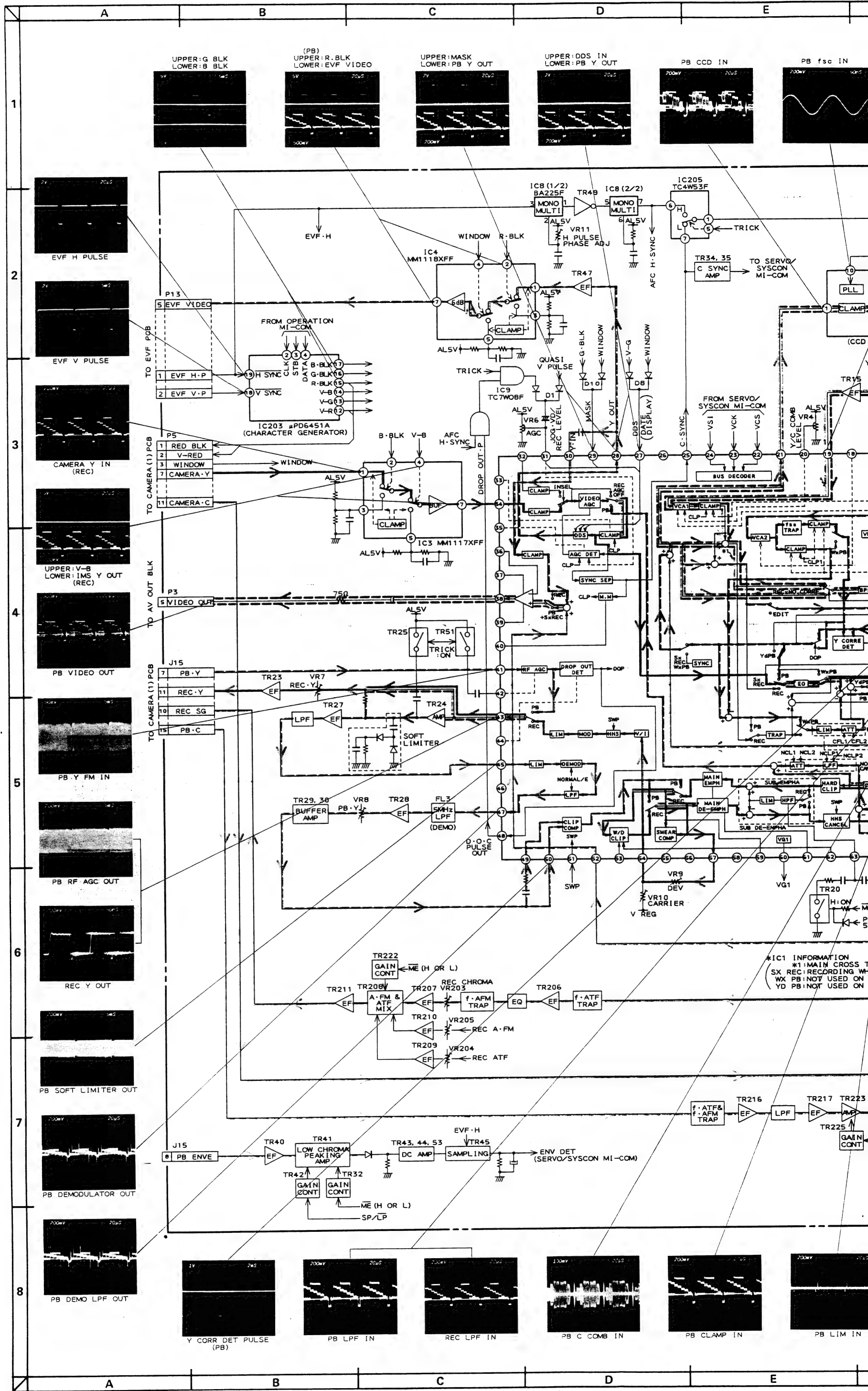
## MODEL PV-M2, M4

### SCHEMATIC DIAGRAMS AND PC BOARDS

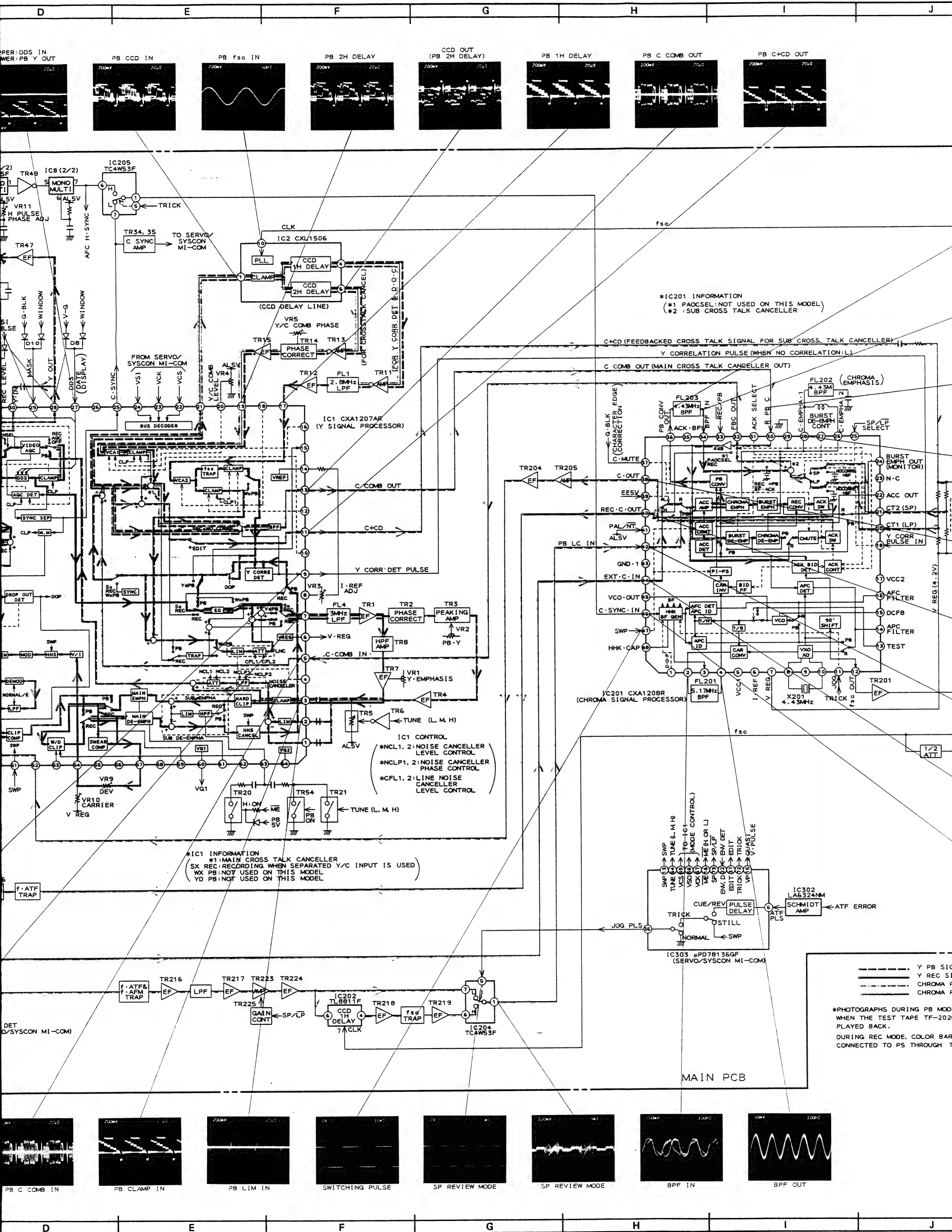
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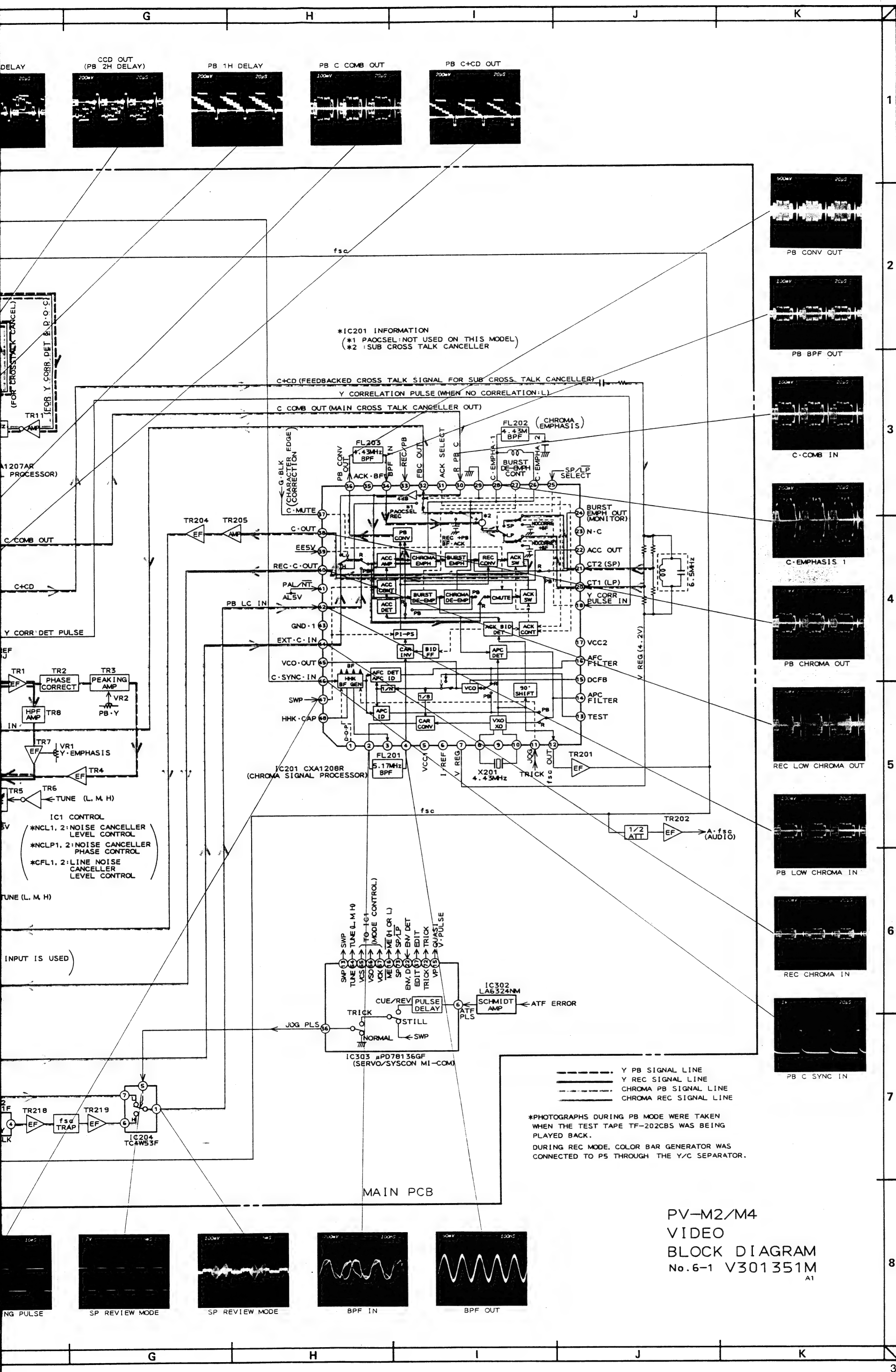
Use these schematic diagrams and PC boards together with the provided service manual.

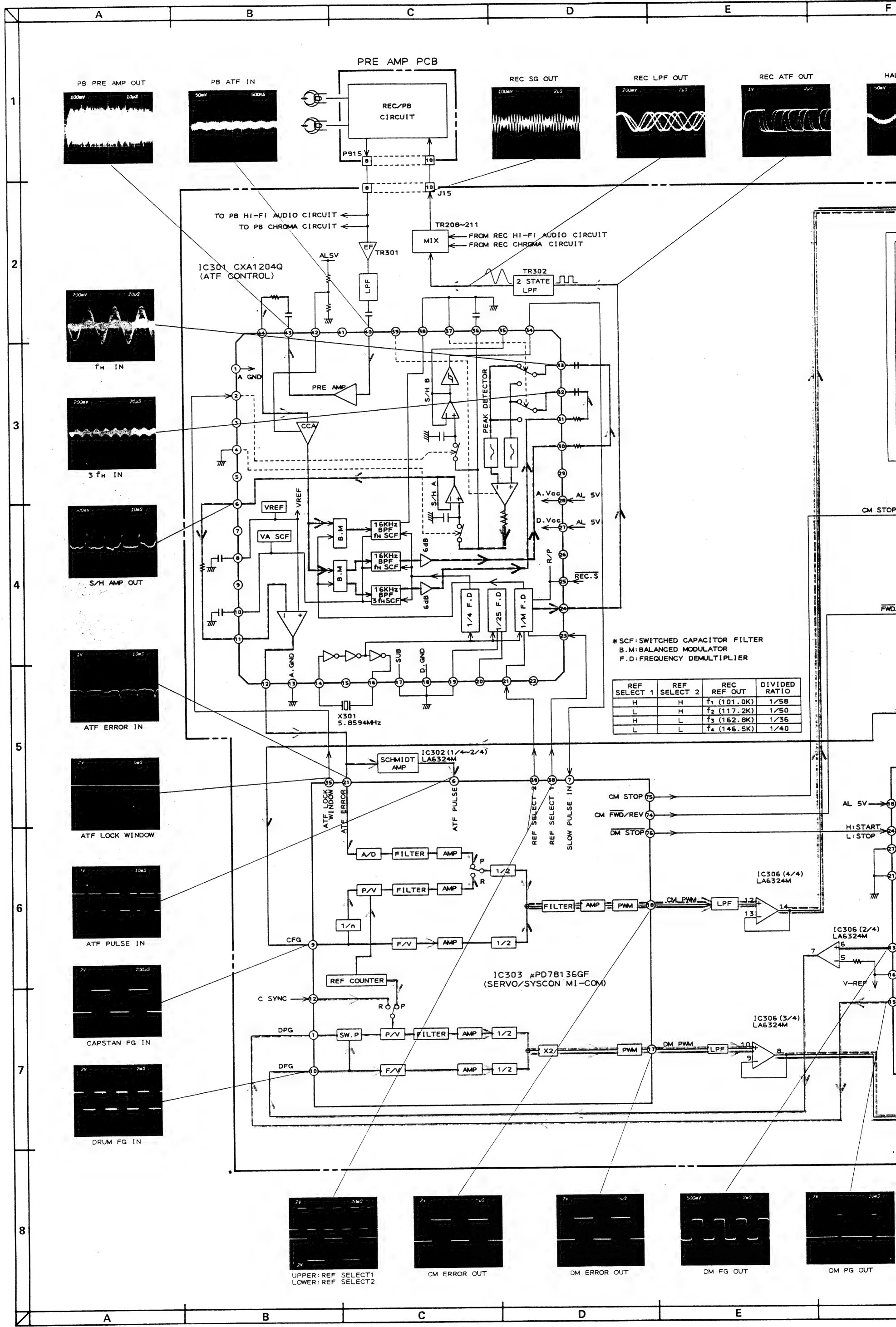


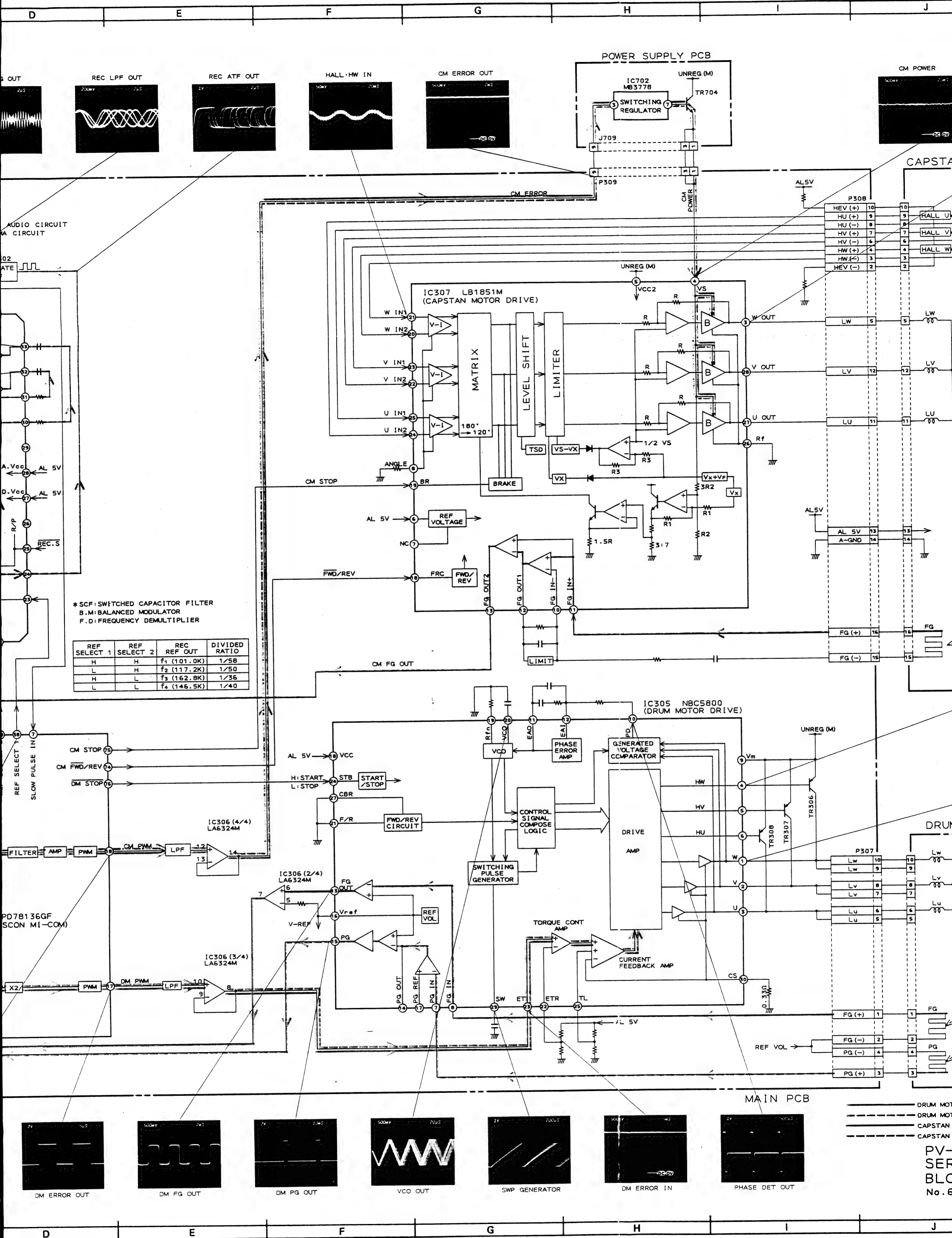


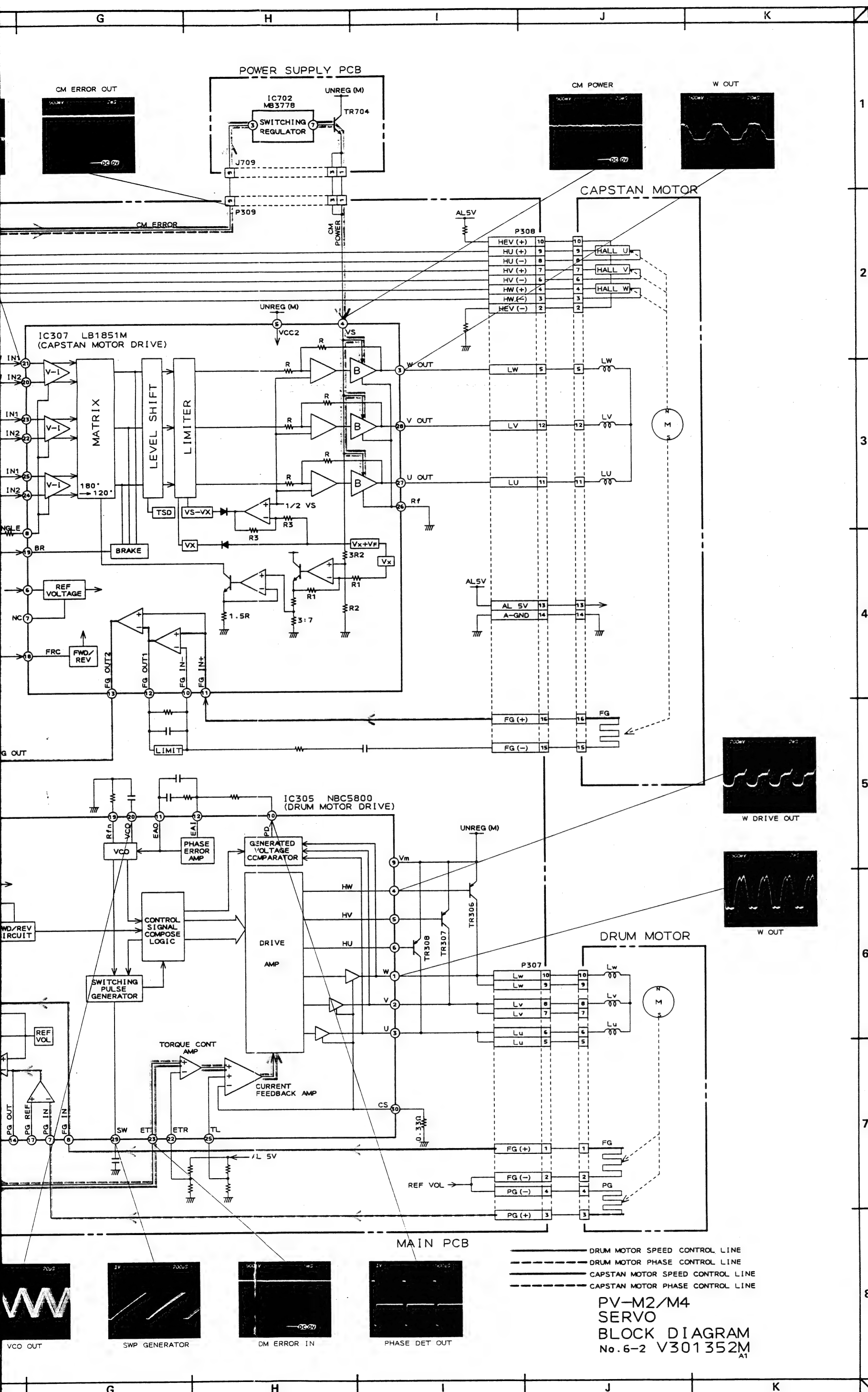




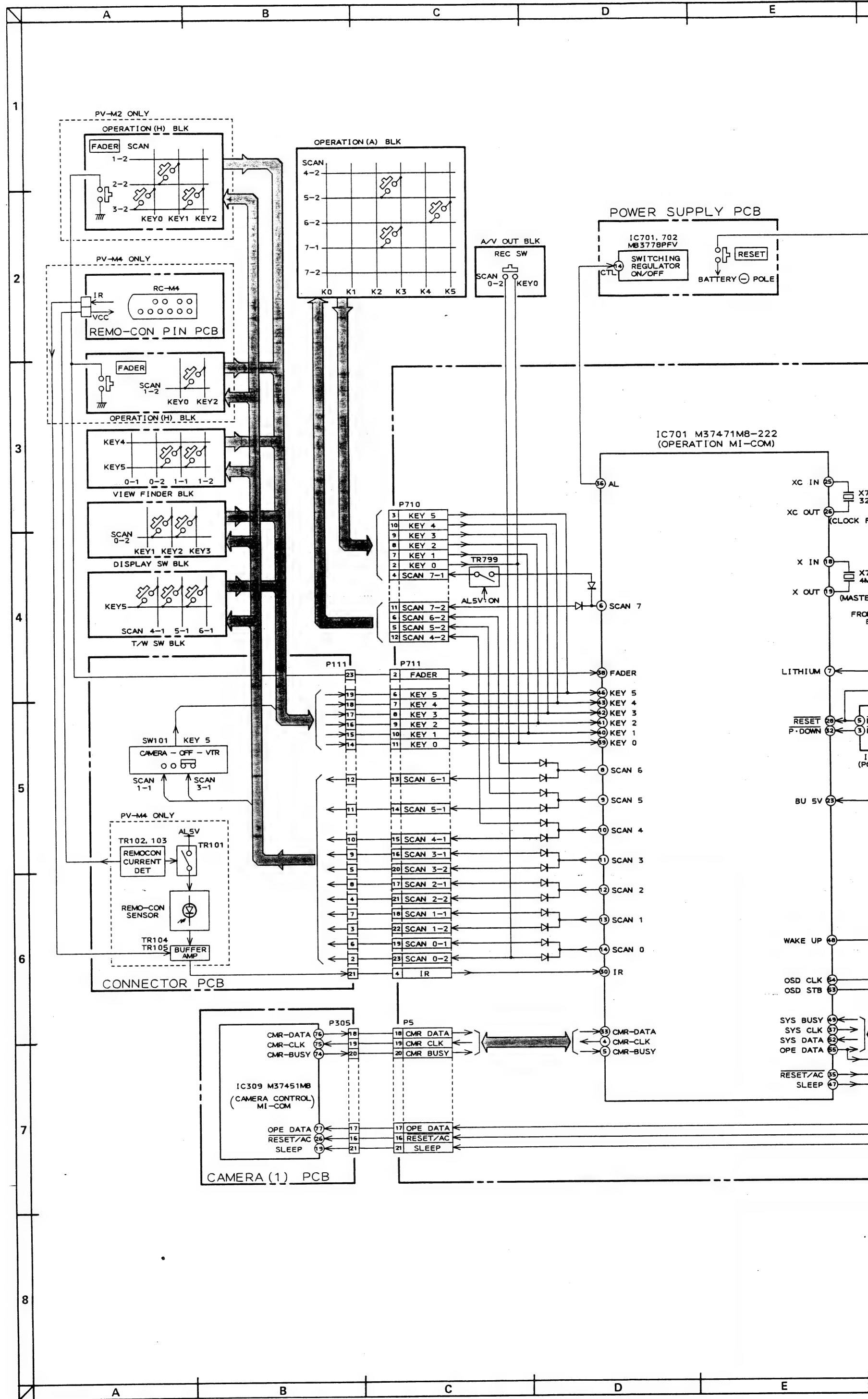


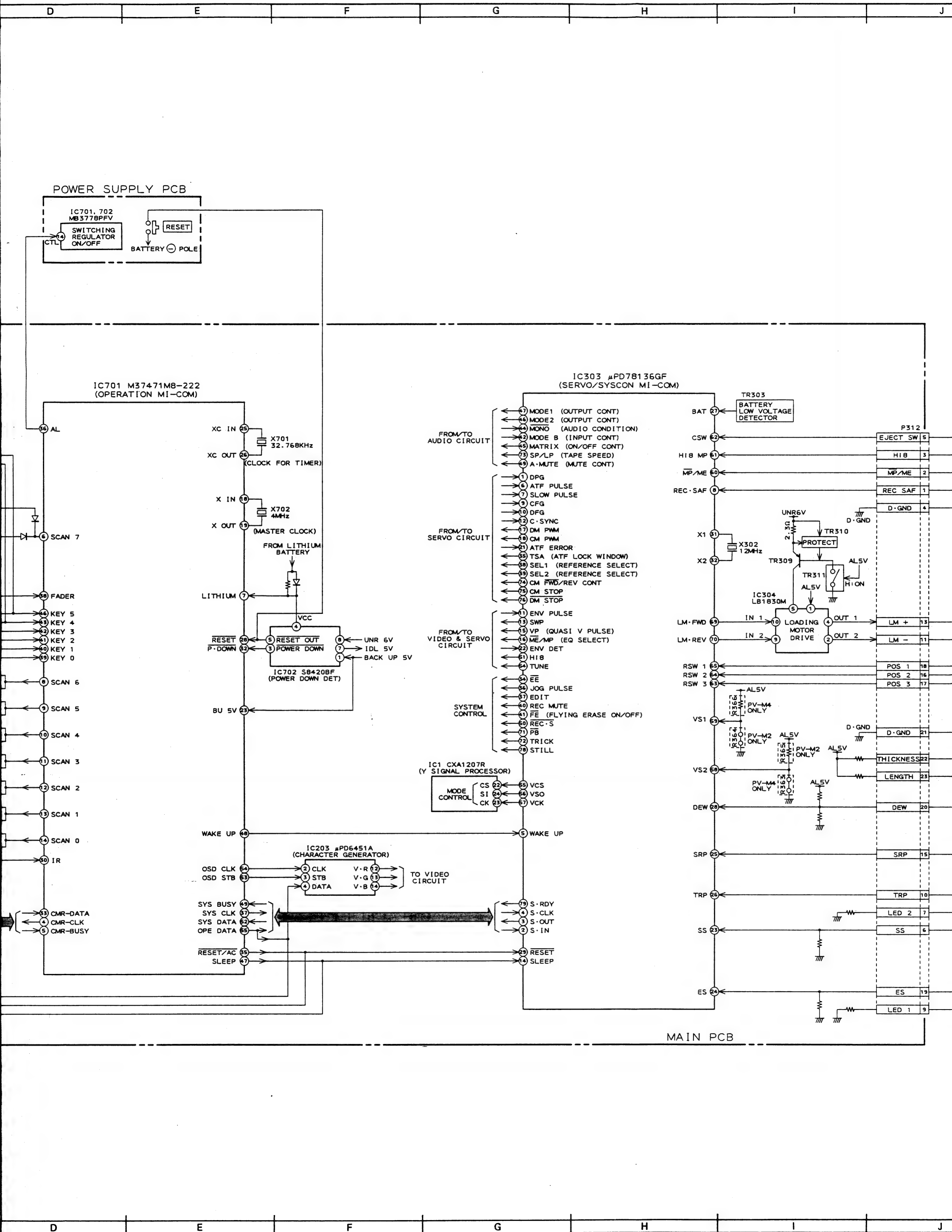


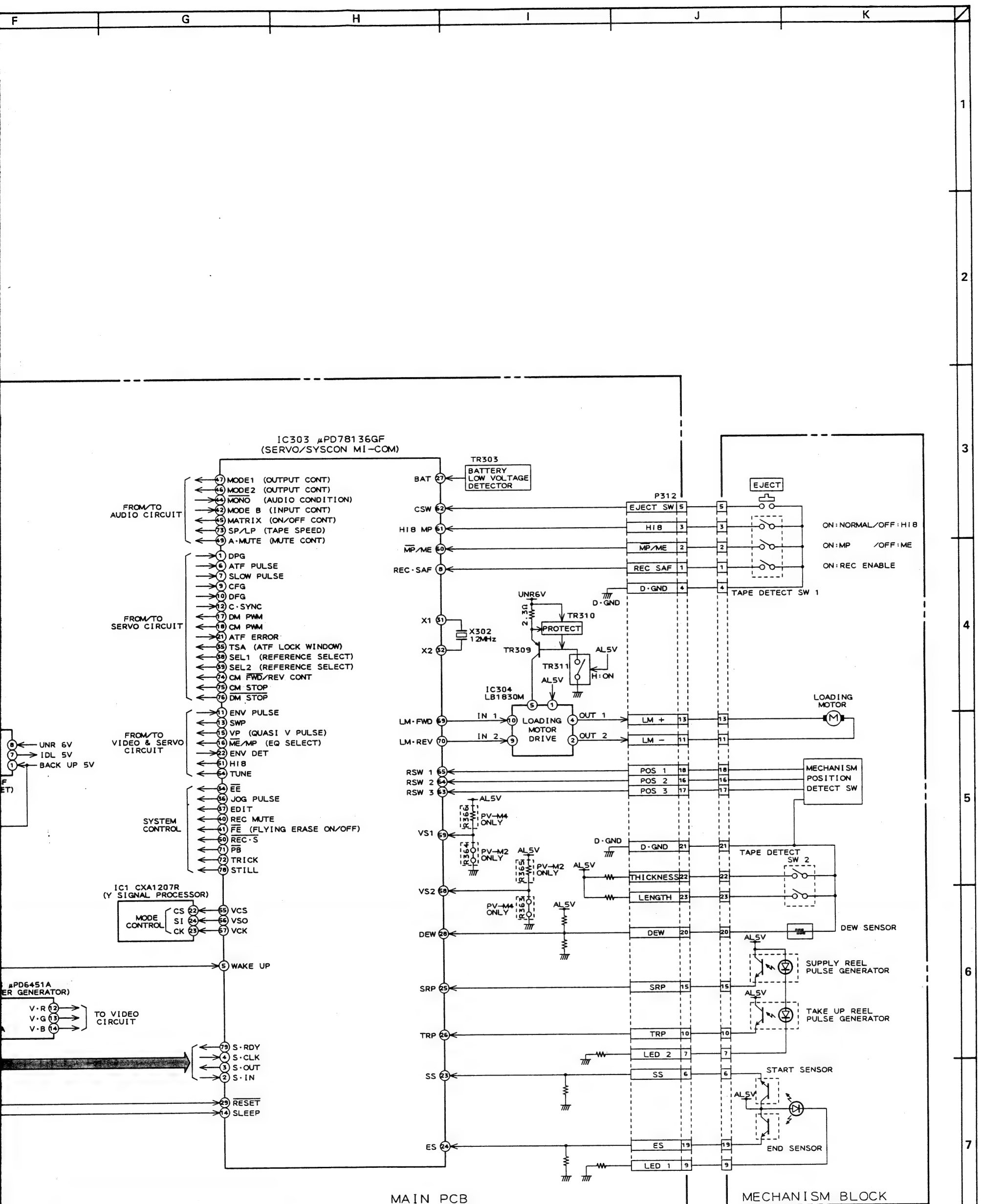






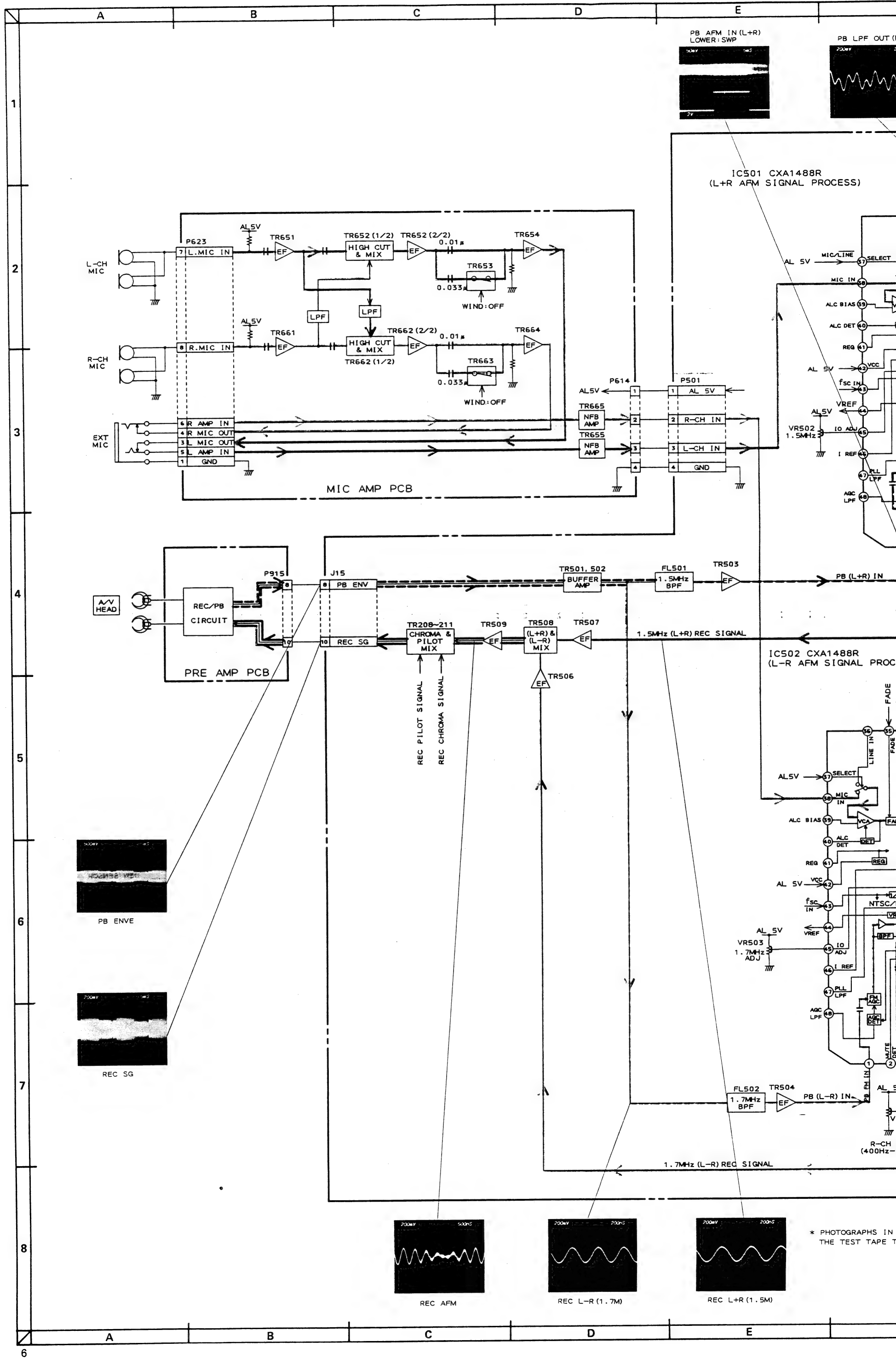


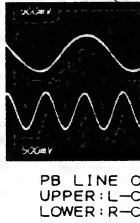




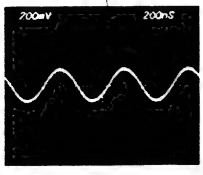
PV-M2/M4  
SYSTEM CONTROL  
BLOCK DIAGRAM  
No. 6-3 V301353M  
A1



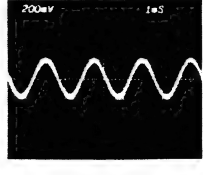




PB LINE C  
UPPER: L-C  
LOWER: R-C

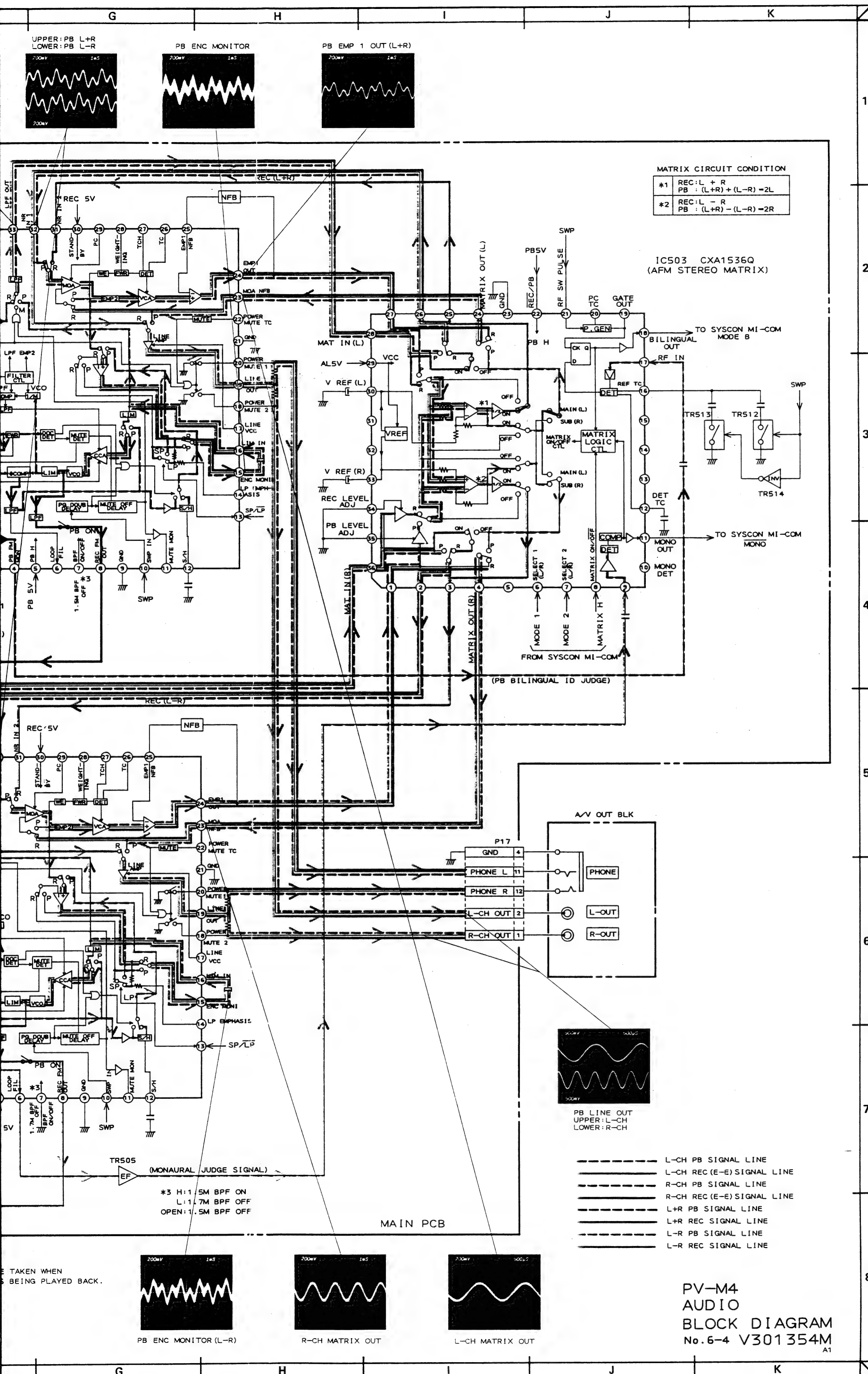


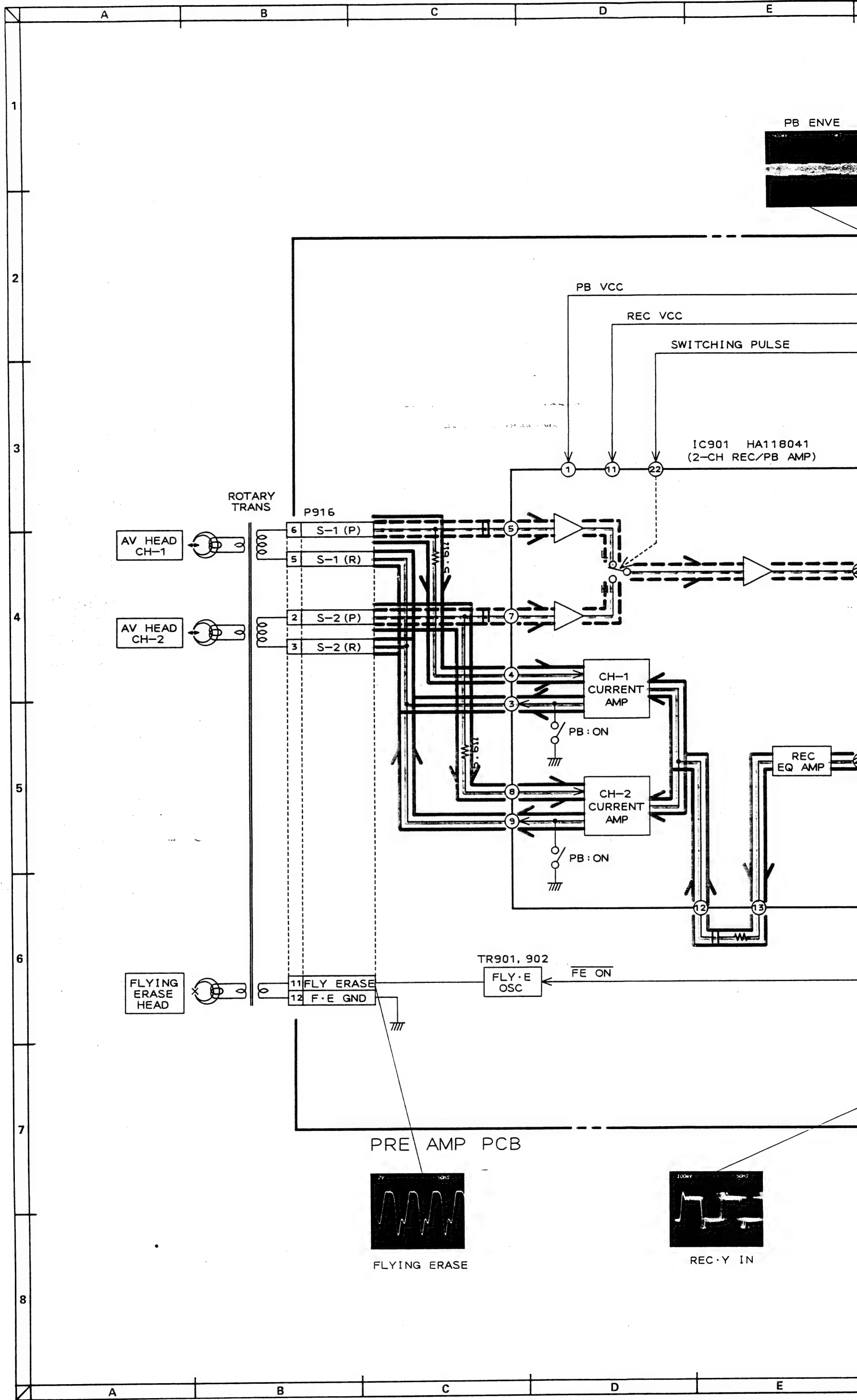
REC L+R (1.5M)



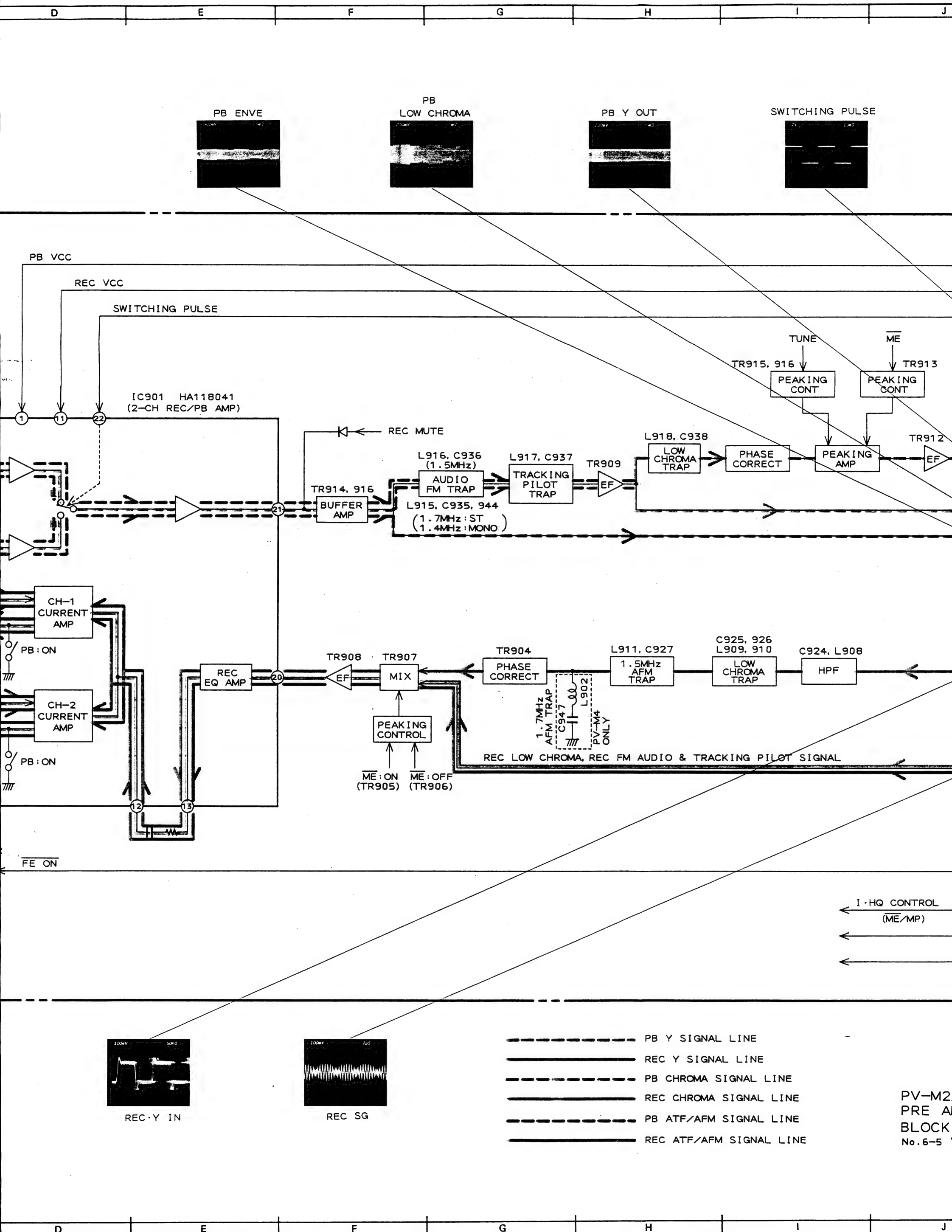
R-CH MATRIX OUT

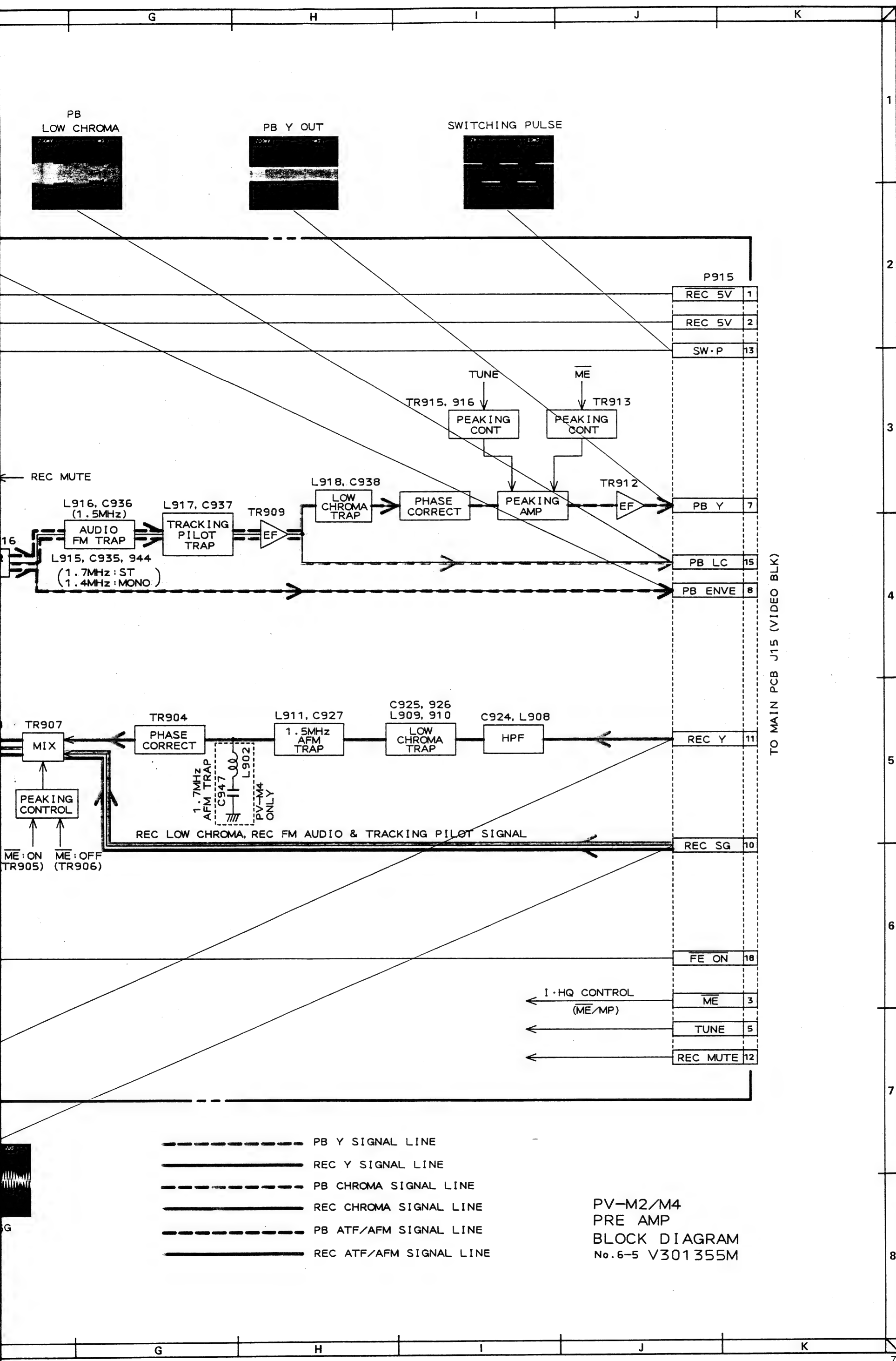


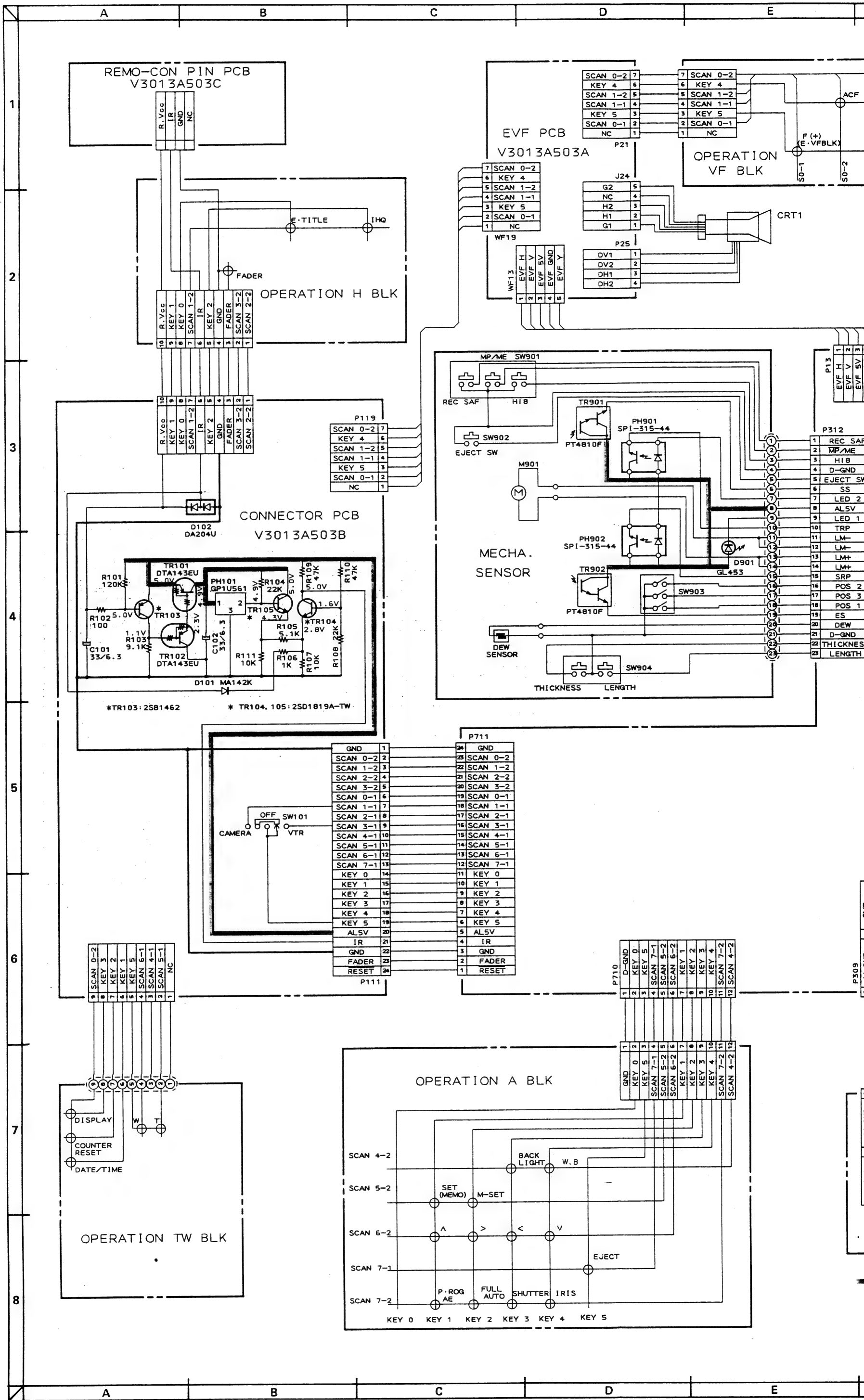


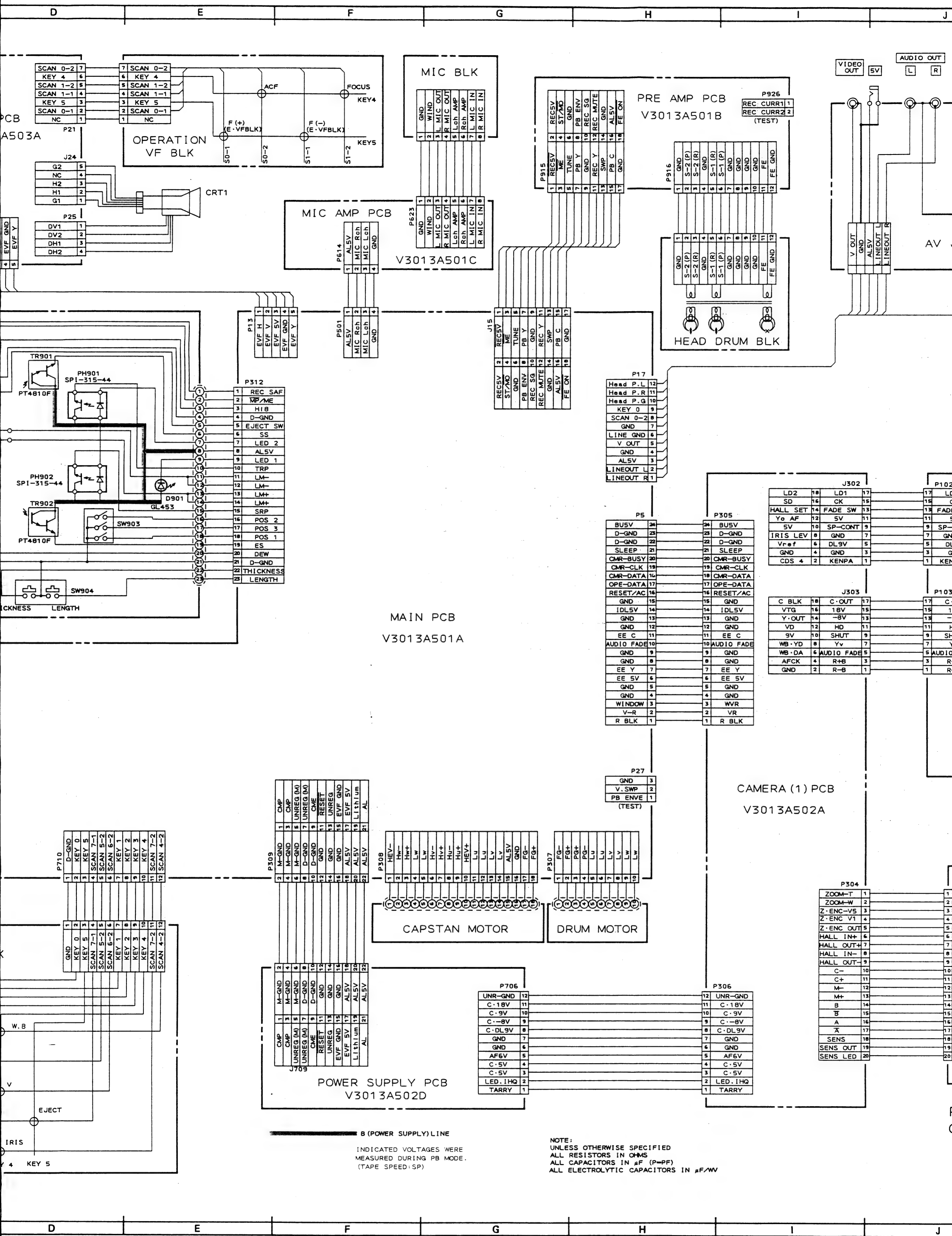




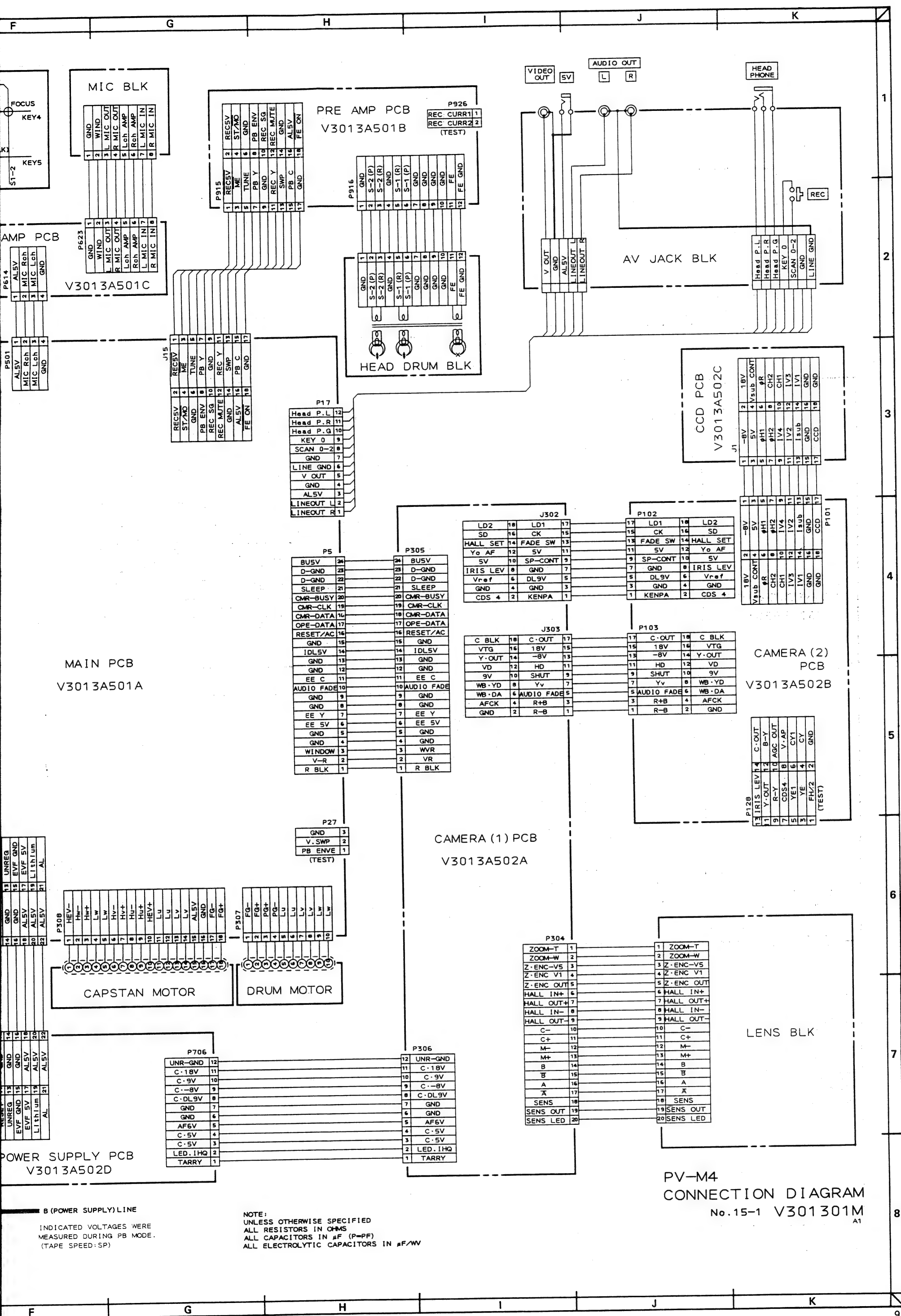


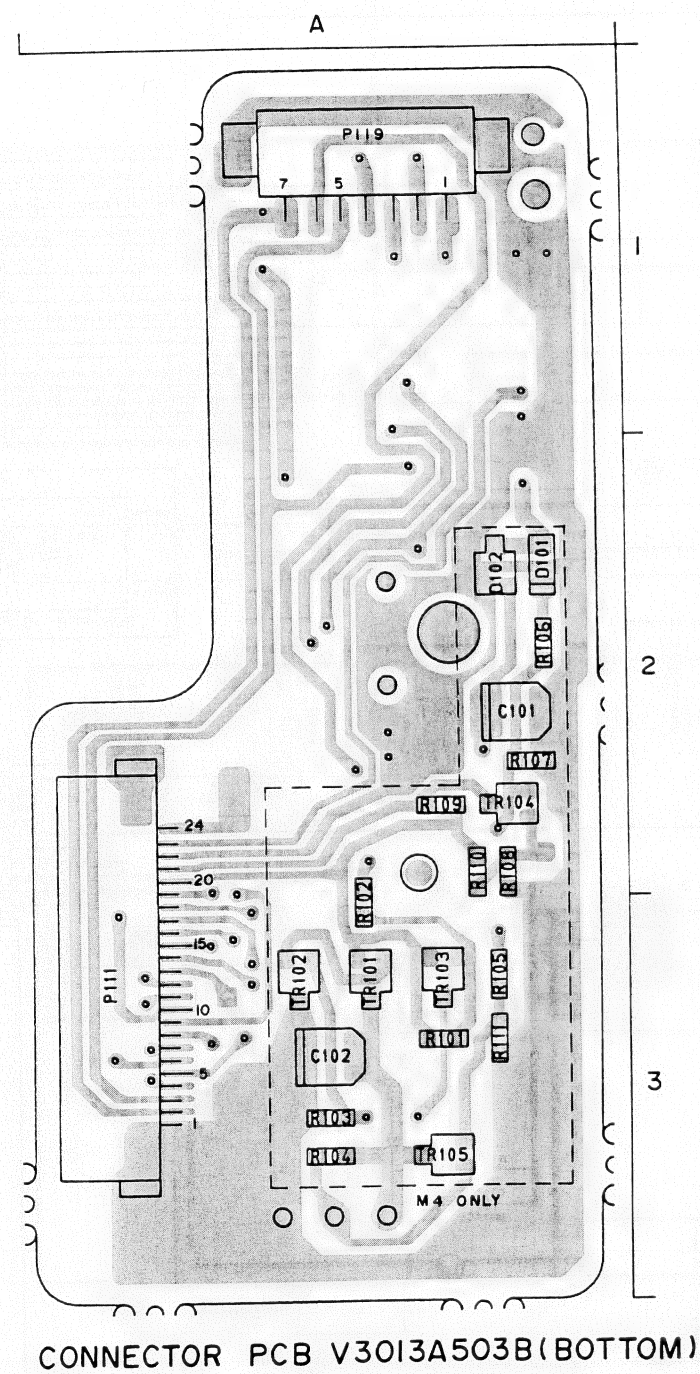












# **PRINCIPAL PARTS LOCATION**

## **DIODES**

D101 ..... A2  
D102 ..... A2

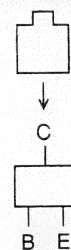
## **TRANSISTORS**

TR101 ..... A3  
TR102 ..... A3  
TR103 ..... A3  
TR104 ..... A2  
TR105 ..... A3

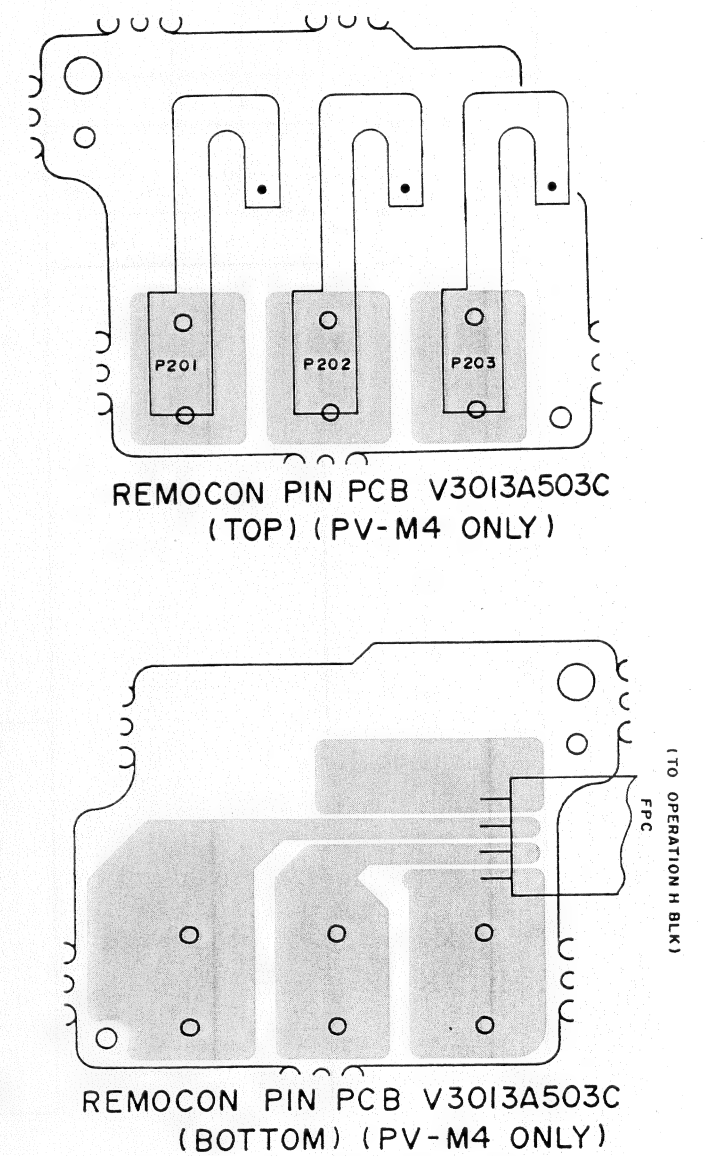
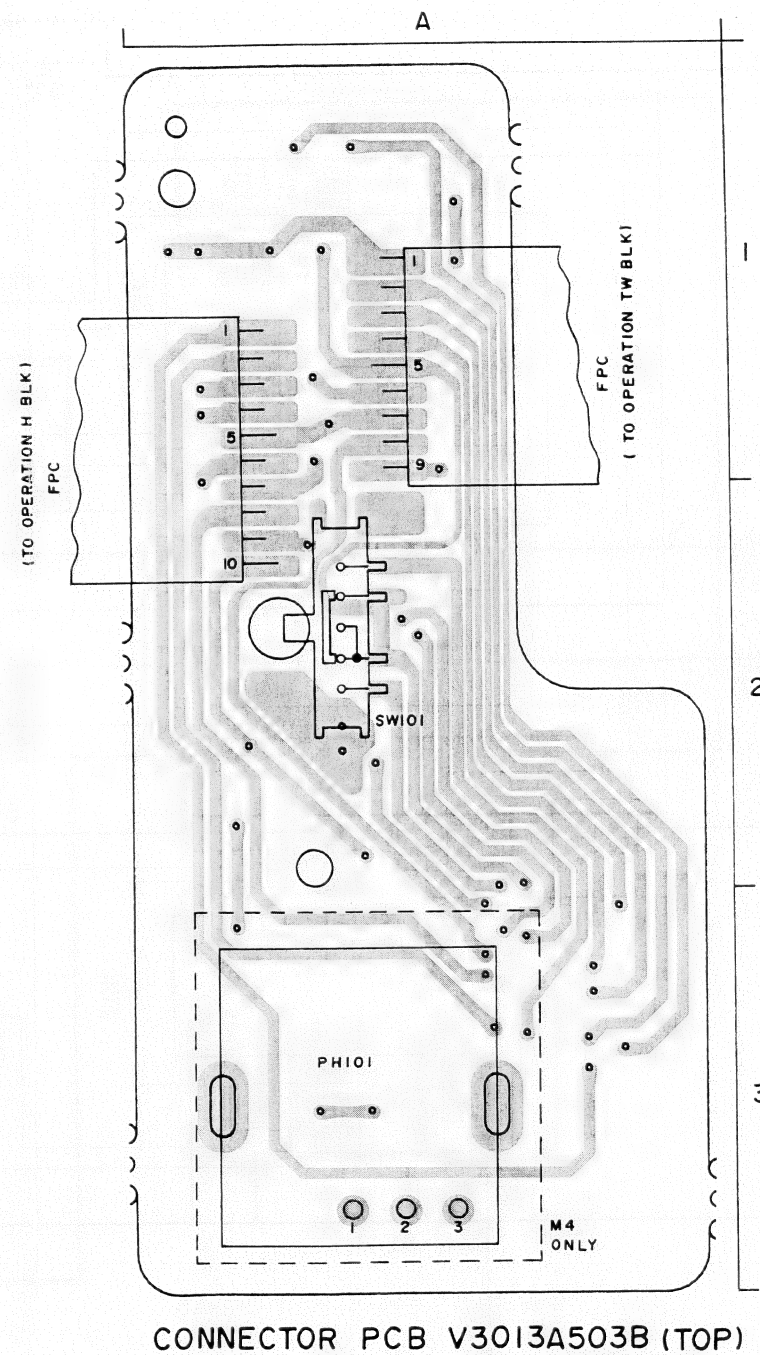
## **CONNECTORS**

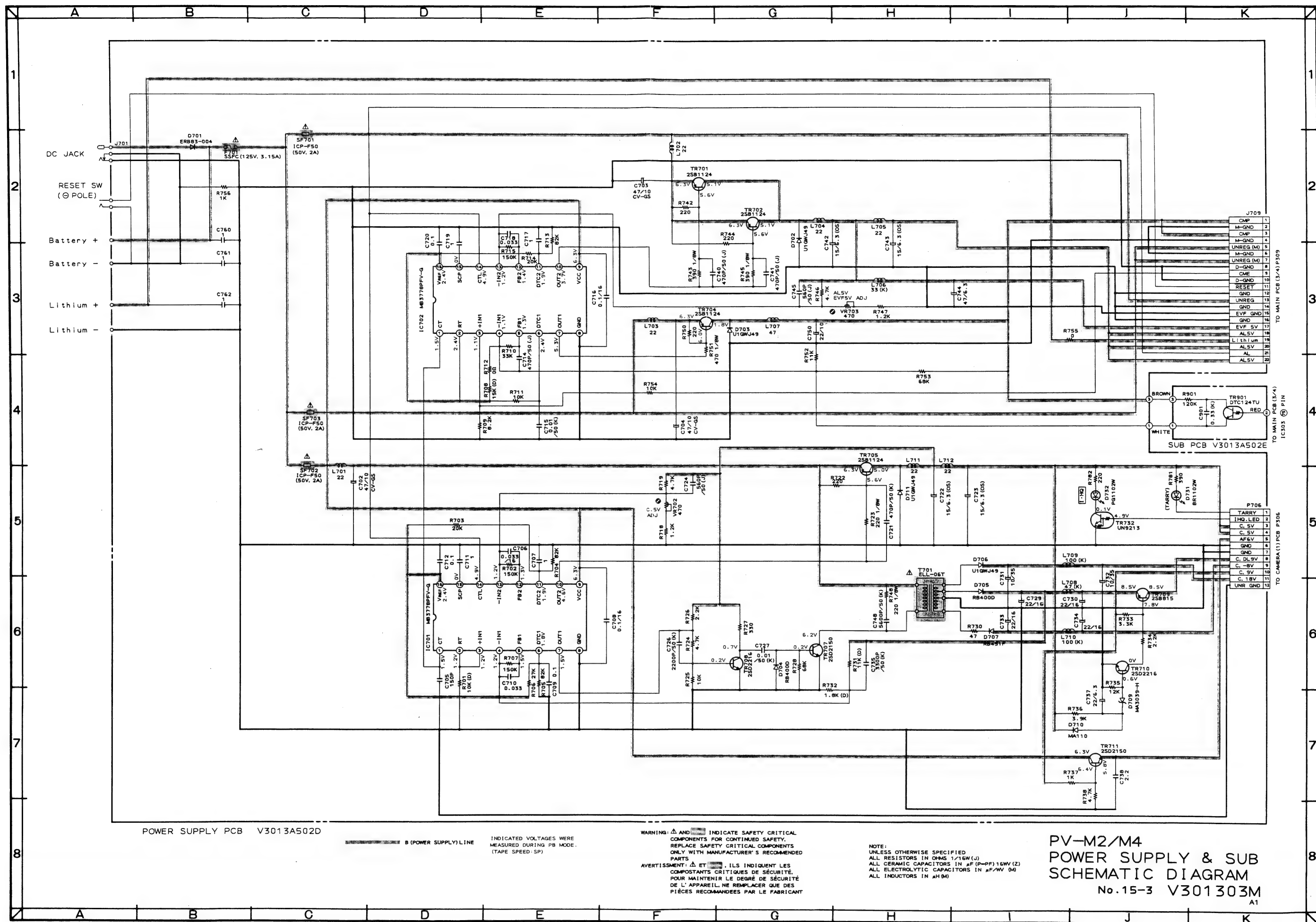
P111 ..... A2,3  
P119 ..... A1

SINGLE CHIP  
TRANSISTOR



DA204U  
1K,2A  
1A 2K  
(D102)







# PRINCIPAL PARTS LOCATION

## ICs

IC701 ..... B4  
IC702 ..... B4

## DIODEs

D701 ..... C2  
D706 ..... B4  
D707 ..... A3  
D731 ..... A2  
D732 ..... A2  
D701 ..... C2

## INDUCTORS

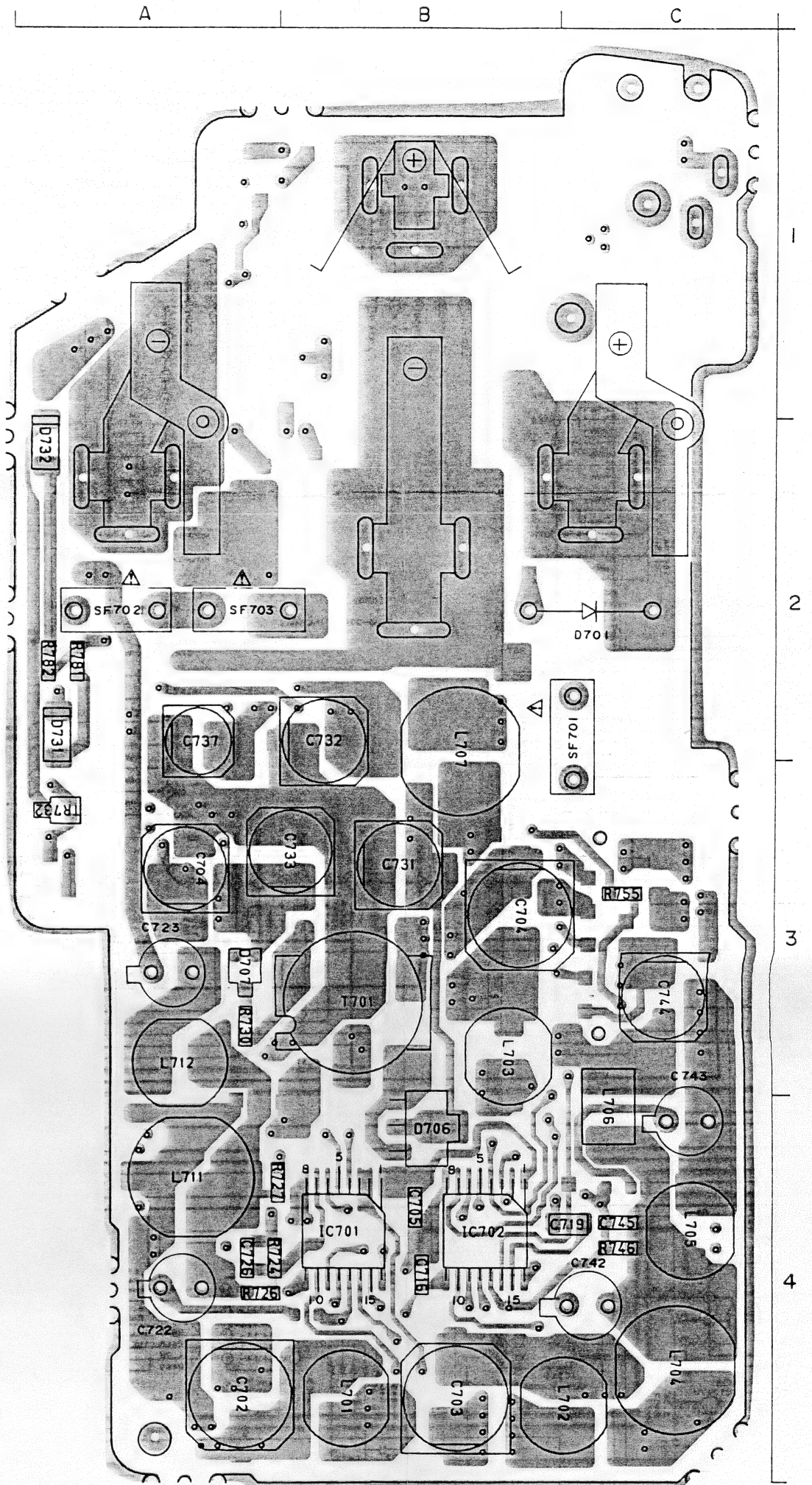
L701 ..... B4  
L702 ..... B,C4  
L703 ..... B3  
L704 ..... C4  
L705 ..... C4  
L706 ..... C3,4  
L707 ..... B2,3  
L711 ..... A4  
L712 ..... A3

## TRANSISTOR

TR732 ..... A3

## FUSEs

SF701 ..... B,C2  
SF702 ..... A2  
SF703 ..... A,B2

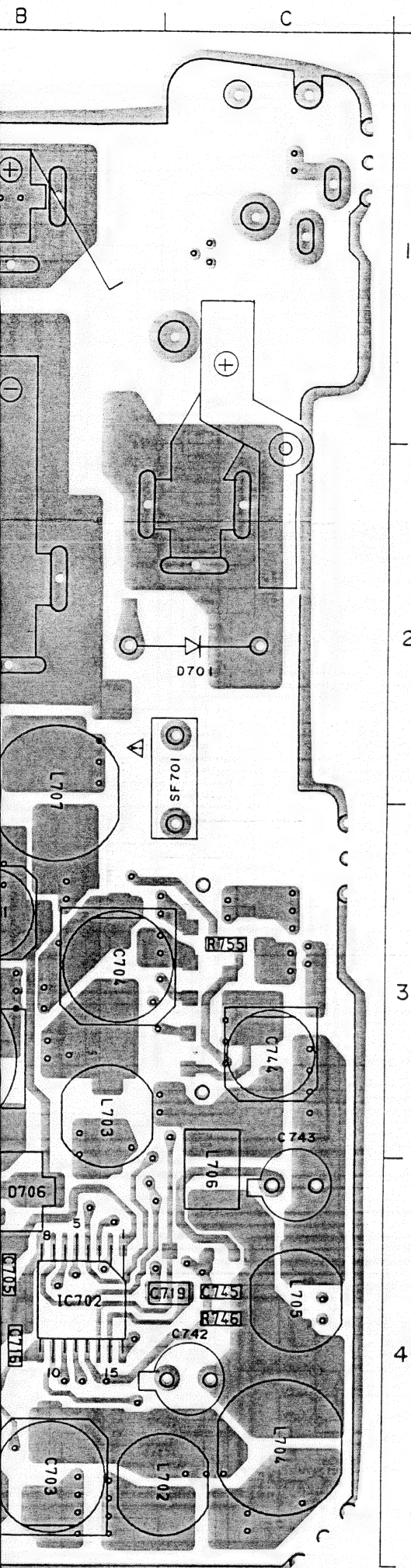


POWER SUPPLY PCB V30I3A502D(BOTTOM)

WARNING:  $\Delta$  INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY.  
REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S  
RECOMMENDED PARTS

AVERTISSEMENT:  $\Delta$  IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ.  
POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL,  
NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT





B V30I3A502D(BOTTOM)

# PRINCIPAL PARTS LOCATION

## DIODEs

D702	.....	C4
D703	.....	B3
D704	.....	A4
D705	.....	B3
D709	.....	A2
D710	.....	B2
D711	.....	A4

## CONNECTORs

J701	.....	C1
J709	.....	C3
P706	.....	A,B1

## INDUCTORs

L708	.....	B3
L709	.....	A3
L710	.....	A3

## TRANSISTORs

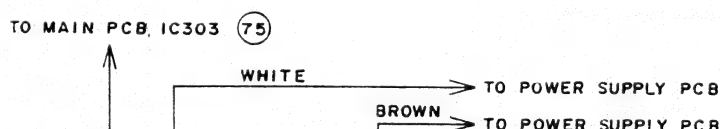
TR701	.....	C4
TR702	.....	C4
TR704	.....	B3
TR705	.....	A,B4
TR707	.....	A3,4
TR708	.....	A4
TR709	.....	A3
TR710	.....	A2
TR711	.....	A3

## VOLUMEs

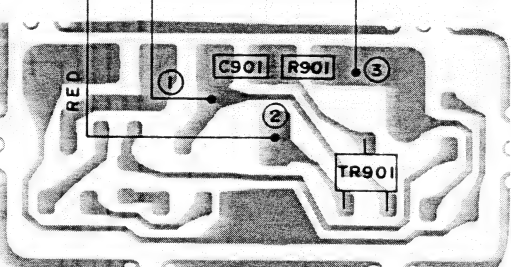
VR702	.....	B4
VR703	.....	C4

## FUSE

F701	.....	B1,5
------	-------	------



TO MAIN PCB, IC303 (75)



SUB PCB V30I3A502E

UIGWJ49



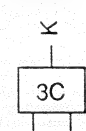
(D702,703)  
(D706,711)

RB400D



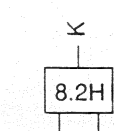
(D704,705)

RB451F

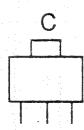


(D707)

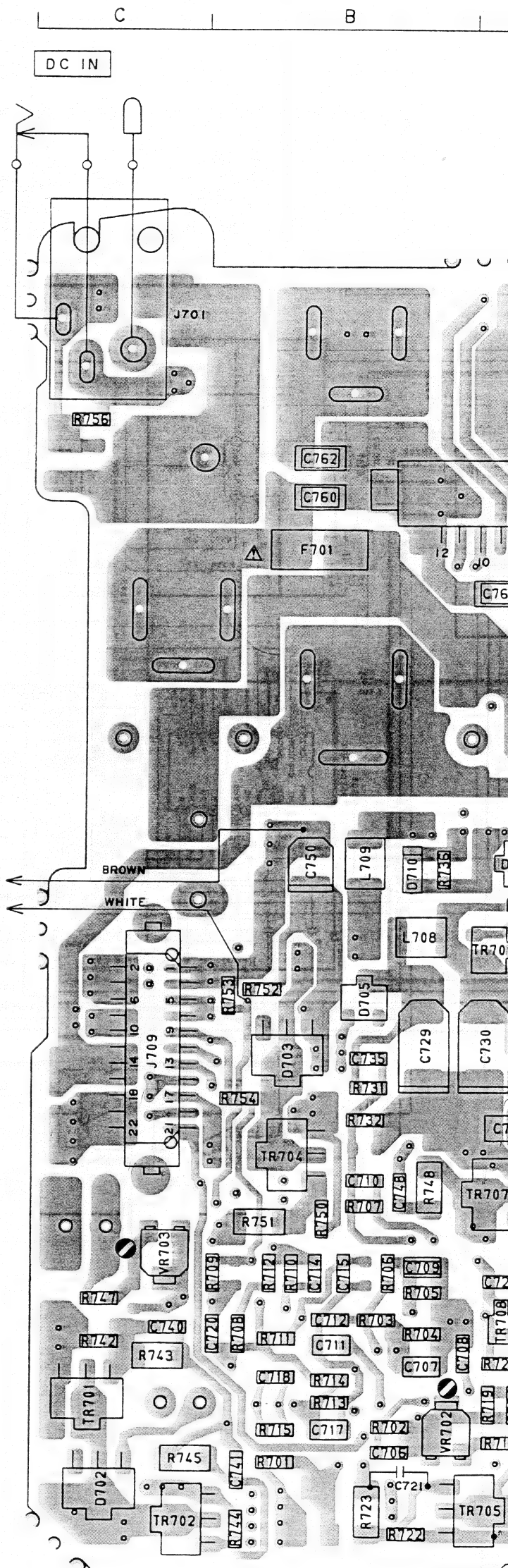
MA3039-HTW



(D709)



B C E



POWER SUPPLY PCB V30I3A502

# PRINCIPAL PARTS LOCATION

## DIODES

D702 ..... C4  
D703 ..... B3  
D704 ..... A4  
D705 ..... B3  
D709 ..... A2  
D710 ..... B2  
D711 ..... A4

## CONNECTORS

J701 ..... C1  
J709 ..... C3  
P706 ..... A,B1

## INDUCTORS

L708 ..... B3  
L709 ..... A3  
L710 ..... A3

## TRANSISTORS

TR701 ..... C4  
TR702 ..... C4  
TR704 ..... B3  
TR705 ..... A,B4  
TR707 ..... A3,4  
TR708 ..... A4  
TR709 ..... A3  
TR710 ..... A2  
TR711 ..... A3

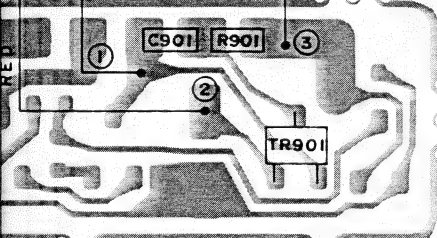
## VOLUMES

VR702 ..... B4  
VR703 ..... C4

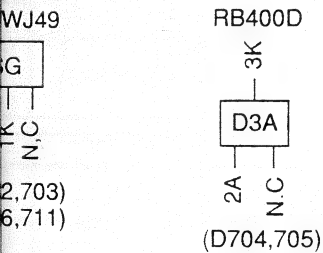
## FUSE

F701 ..... B1,5

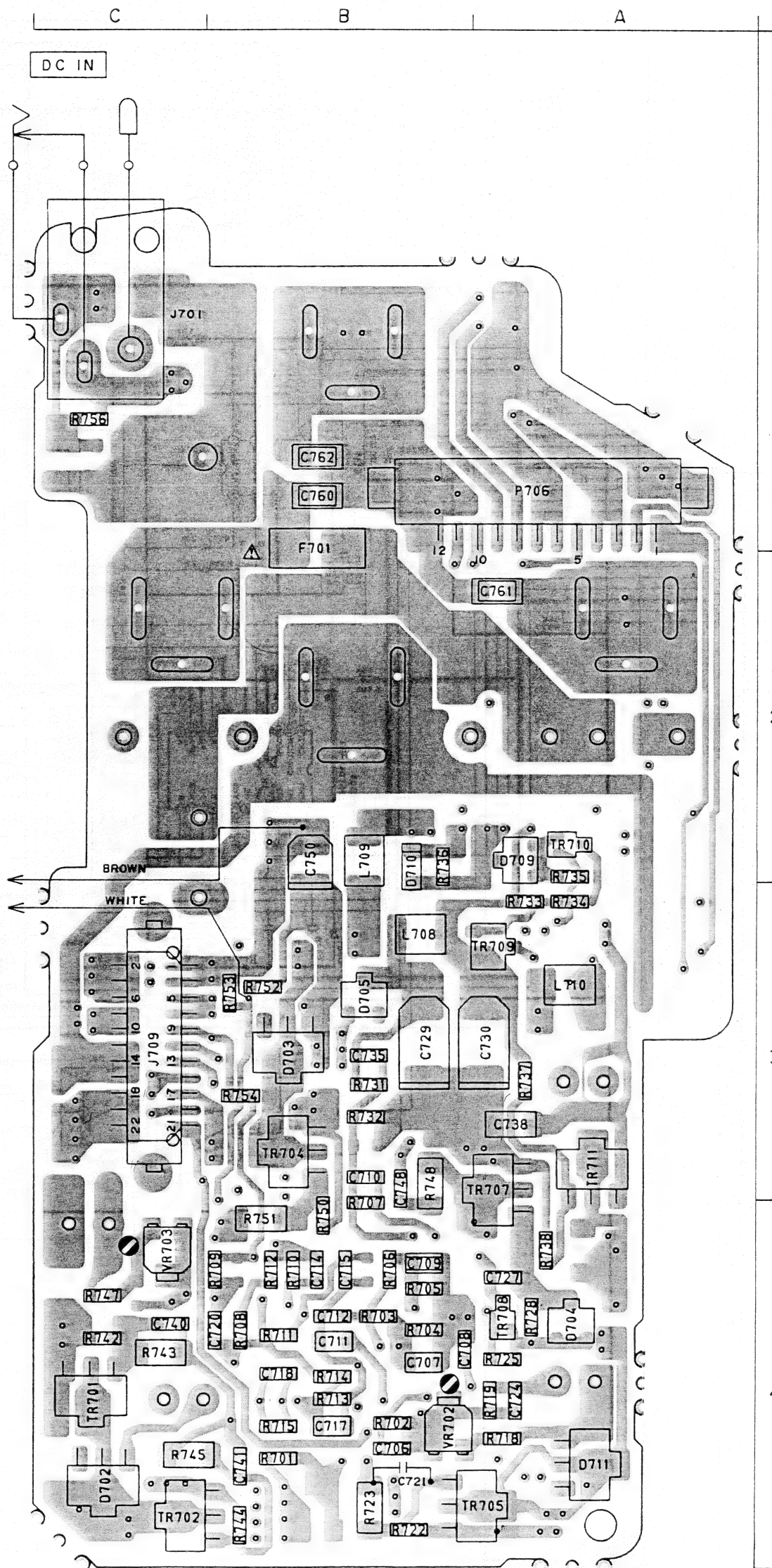
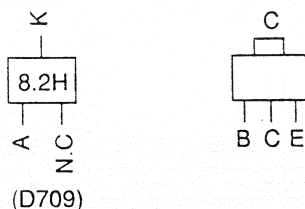
PCB, IC303 75  
WHITE  
BROWN  
TO POWER SUPPLY PCB  
TO POWER SUPPLY PCB



PCB V30I3A502E

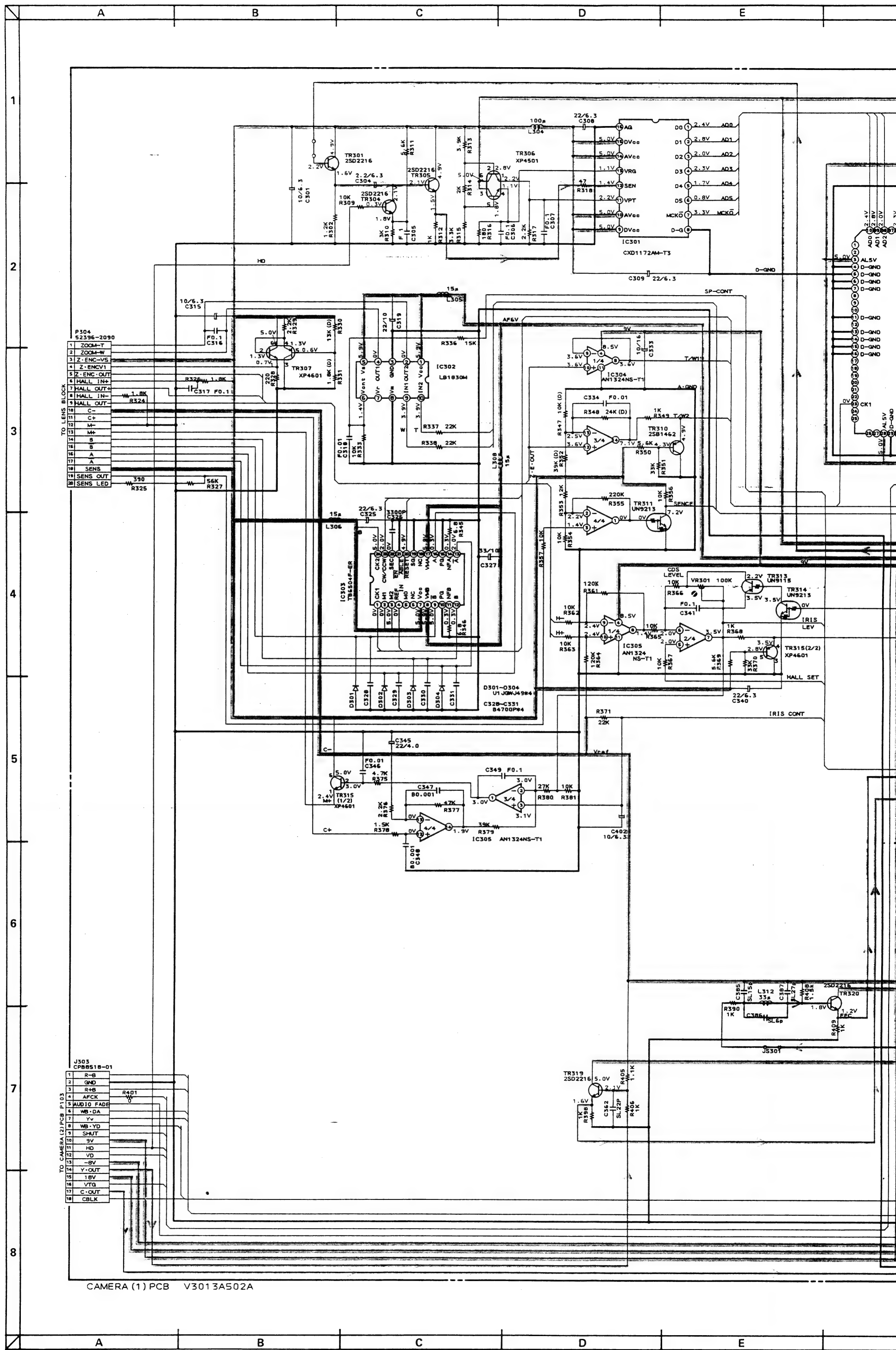


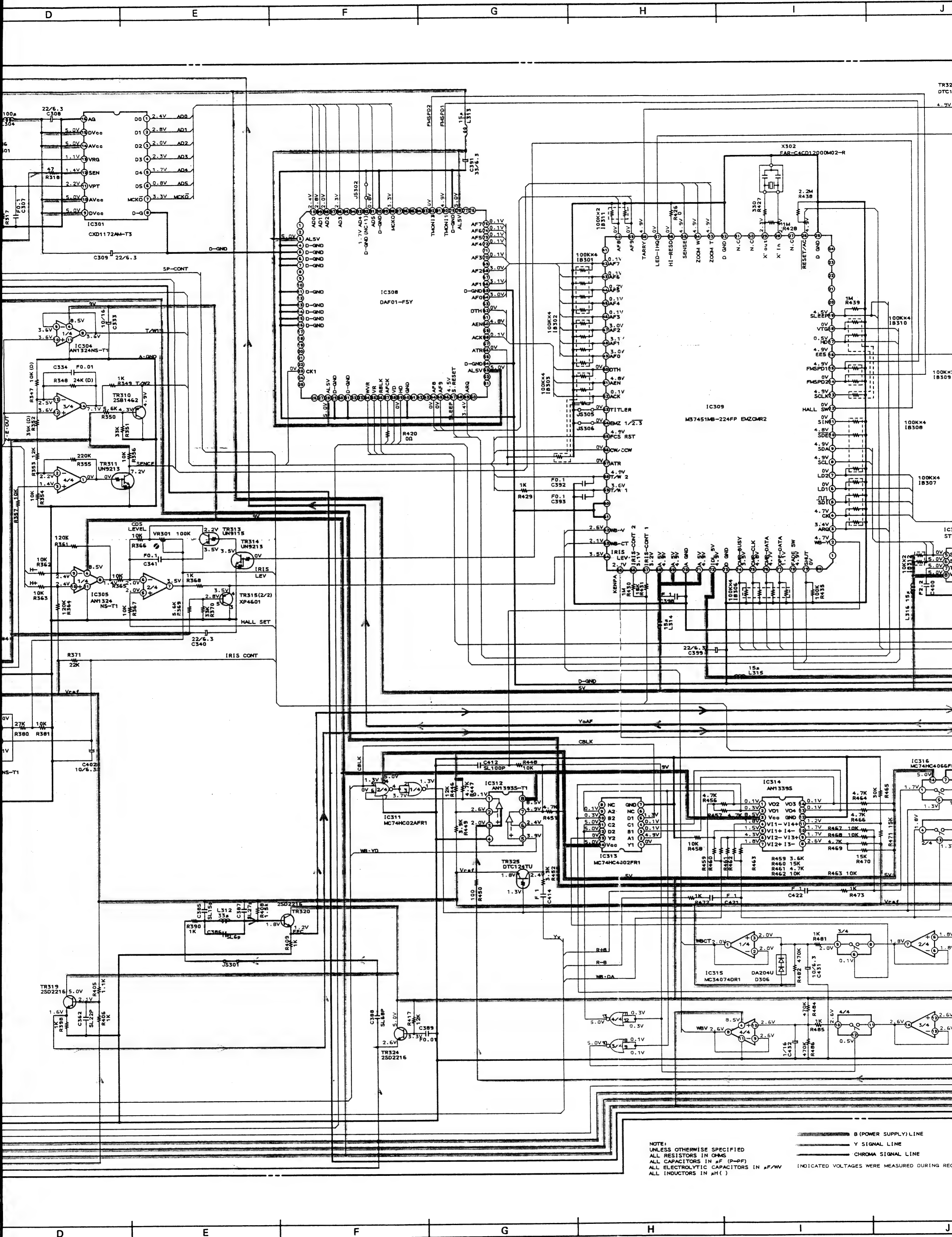
MA3039-HTW



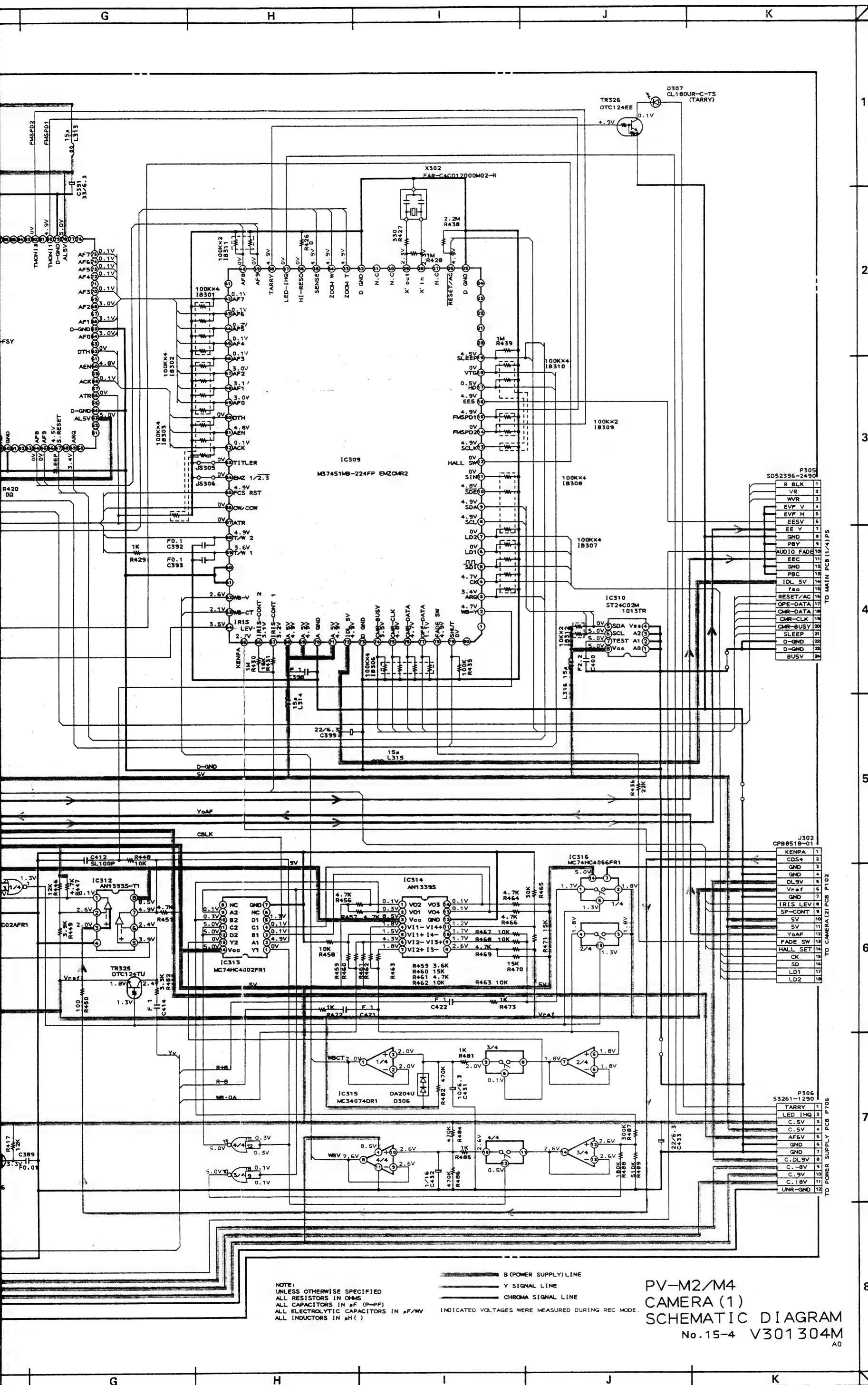
POWER SUPPLY PCB V30I3A502D (TOP)





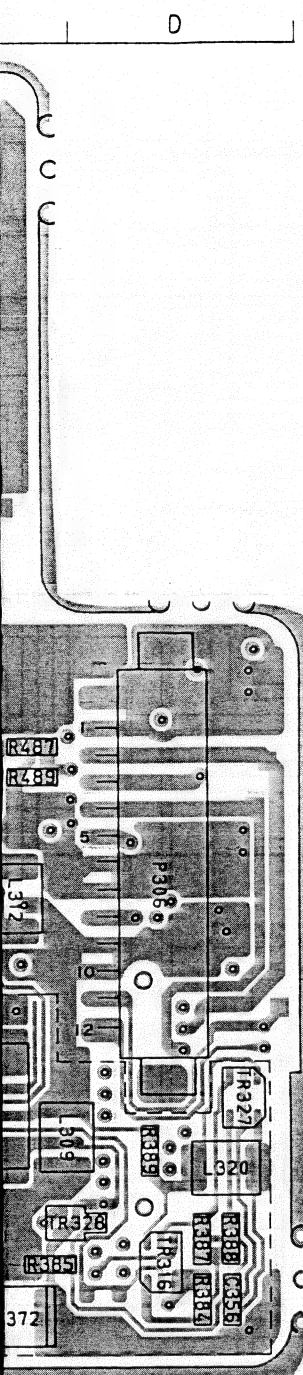












3A502A (BOTTOM)

ON MODEL NUMBER.  
GRAMS FOR PERTAINING

## PRINCIPAL PARTS LOCATION

### ICs

IC302 ..... A5,6  
IC304 ..... A4,5  
IC305 ..... B,C2  
IC306 ..... B,C3  
IC309 ..... A,B1,2

### DIODEs

D301 ..... A4,5  
D302 ..... A5  
D303 ..... B4,5  
D304 ..... B5

### INTEGRATED BLOCKs

IB306 ..... C1  
IB307 ..... B1  
IB308 ..... B1  
IB309 ..... A2  
IB310 ..... A,B1  
IB311 ..... A2

### CONNECTORs

P305 ..... C1,2  
P306 ..... D3

### X - TAL

X301 ..... C3

### INDUCTORs

L304 ..... A2  
L305 ..... A5  
L308 ..... A4  
L309 ..... C,D3  
L312 ..... C3  
L313 ..... A1  
L314 ..... B1  
L315 ..... C1  
L316 ..... B,C1  
L320 ..... D3

### TRANSISTORs

TR301 ..... A3  
TR304 ..... A3  
TR305 ..... B3  
TR306 ..... A2,3  
TR307 ..... A6  
TR310 ..... A4  
TR311 ..... A4  
TR314 ..... B1  
TR315 ..... B2,3  
TR316 ..... D4  
TR326 ..... A6  
TR327 ..... D3  
TR328 ..... C,D4

## PRINCIPAL PARTS LOCATION

### ICs

IC301 ..... A2,3  
IC303 ..... A,B4,5  
IC307 ..... B,C3  
IC308 ..... A,B1,2  
IC310 ..... B,C1  
IC311 ..... A,B1  
IC312 ..... B1  
IC313 ..... B2  
IC314 ..... B2  
IC315 ..... C,D2  
IC316 ..... C2

### DIODEs

D306 ..... C2,3  
D307 ..... A6

### INTEGRATED BLOCKs

IB301 ..... B2  
IB302 ..... B2  
IB303 ..... B1,2  
IB312 ..... C1

### INDUCTORs

L306 ..... A4  
L310 ..... C4  
L314 ..... C1,2

### TRANSISTORs

TR313 ..... B1  
TR318 ..... D2  
TR319 ..... C4  
TR320 ..... C3  
TR321 ..... C4  
TR322 ..... C3  
TR323 ..... C3  
TR324 ..... D3  
TR325 ..... B1

### VOLUME

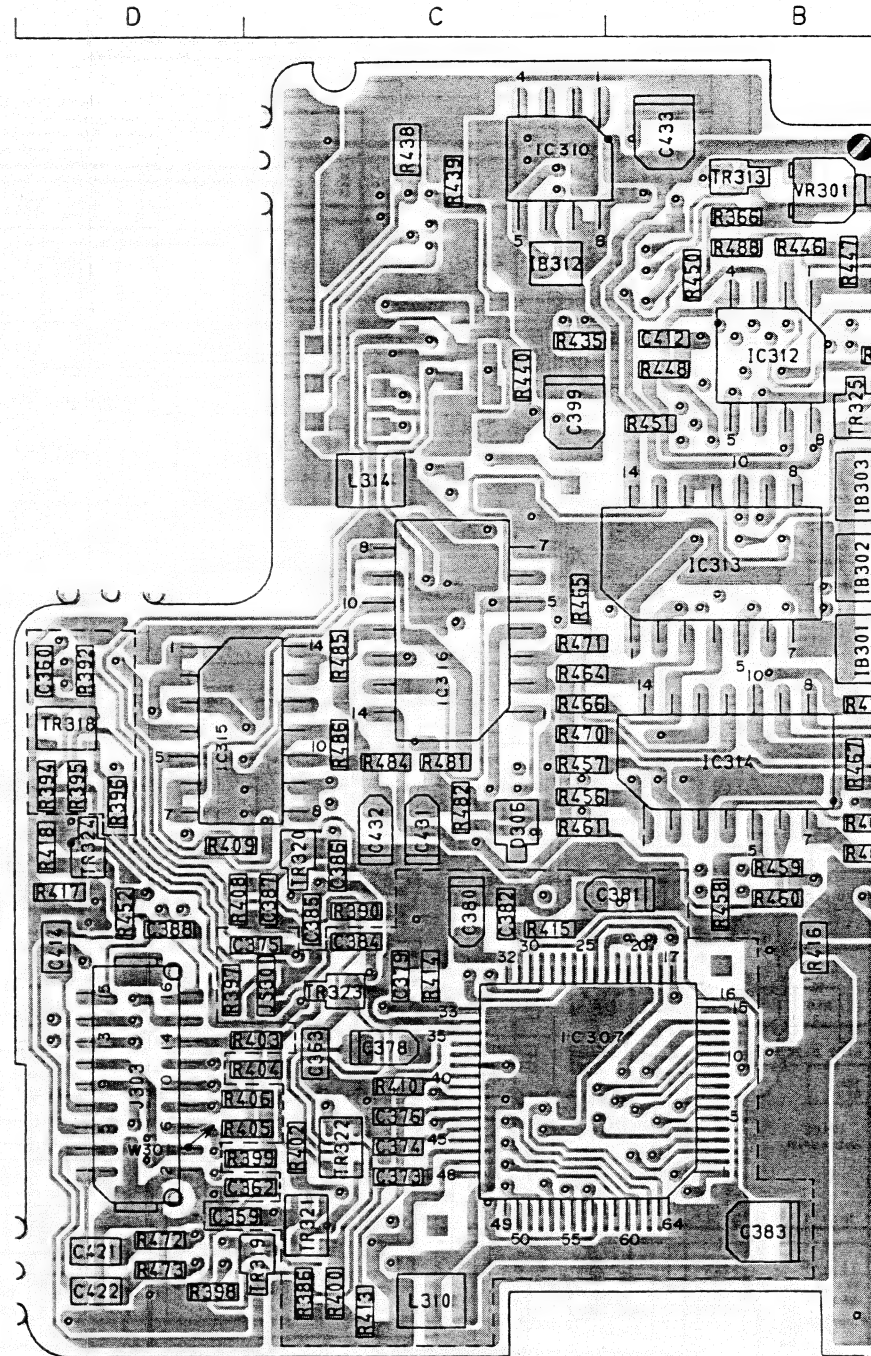
VR301 ..... B1

### X - TAL

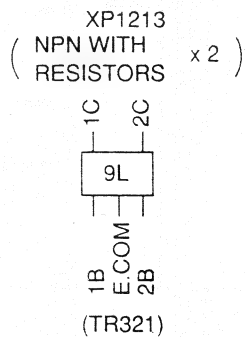
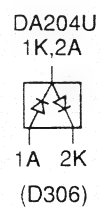
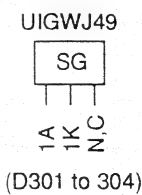
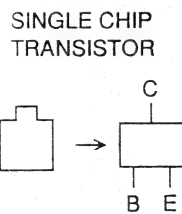
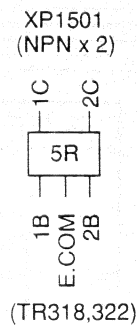
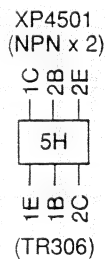
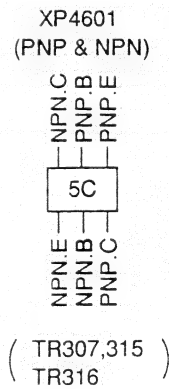
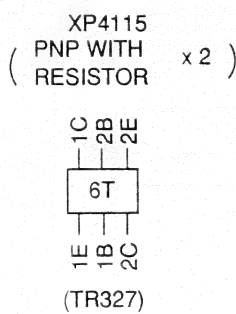
X302 ..... A1

### CONNECTORs

J302 ..... A3  
J303 ..... D3  
P304 ..... A5,6



CAMERA (I) PCB V30I3A502A (TOP)





# PRINCIPAL PARTS LOCATION

ICs  
 IC301 ..... A2,3  
 IC303 ..... A,B4,5  
 IC307 ..... B,C3  
 IC308 ..... A,B1,2  
 IC310 ..... B,C1  
 IC311 ..... A,B1  
 IC312 ..... B1  
 IC313 ..... B2  
 IC314 ..... B2  
 IC315 ..... C,D2  
 IC316 ..... C2

DIODES  
 D306 ..... C2,3  
 D307 ..... A6

INTEGRATED BLOCKs  
 IB301 ..... B2  
 IB302 ..... B2  
 IB303 ..... B1,2  
 IB312 ..... C1

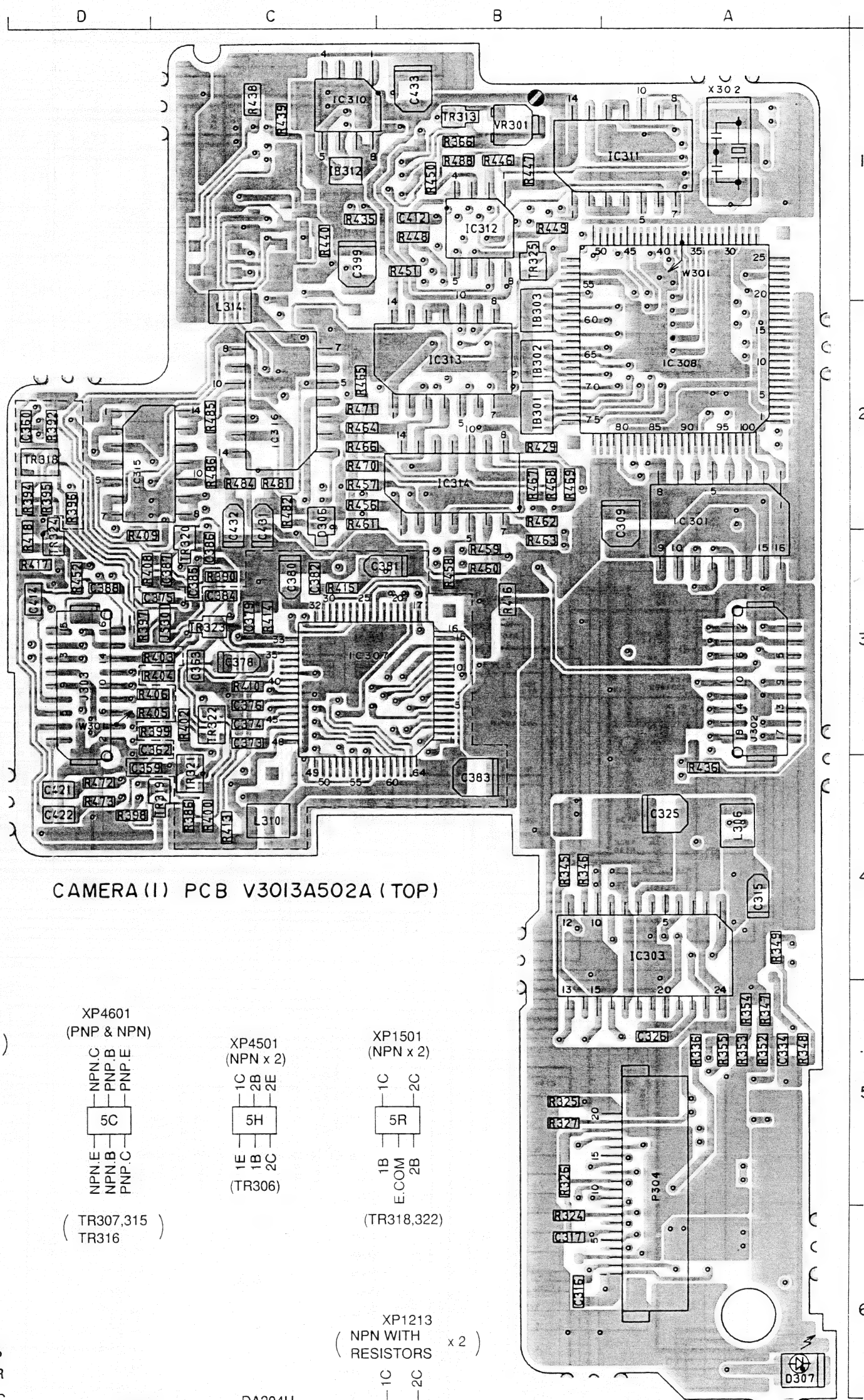
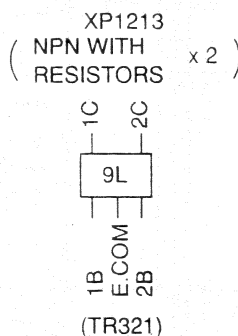
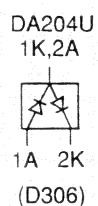
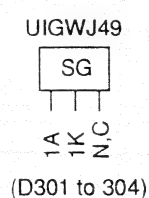
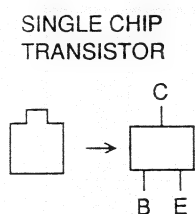
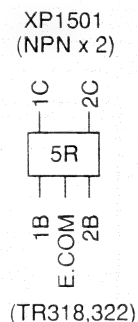
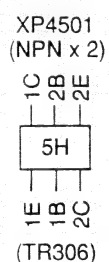
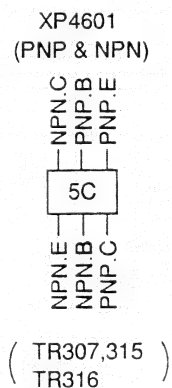
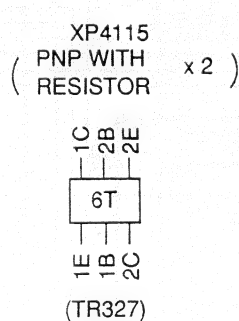
INDUCTORS  
 L306 ..... A4  
 L310 ..... C4  
 L314 ..... C1,2

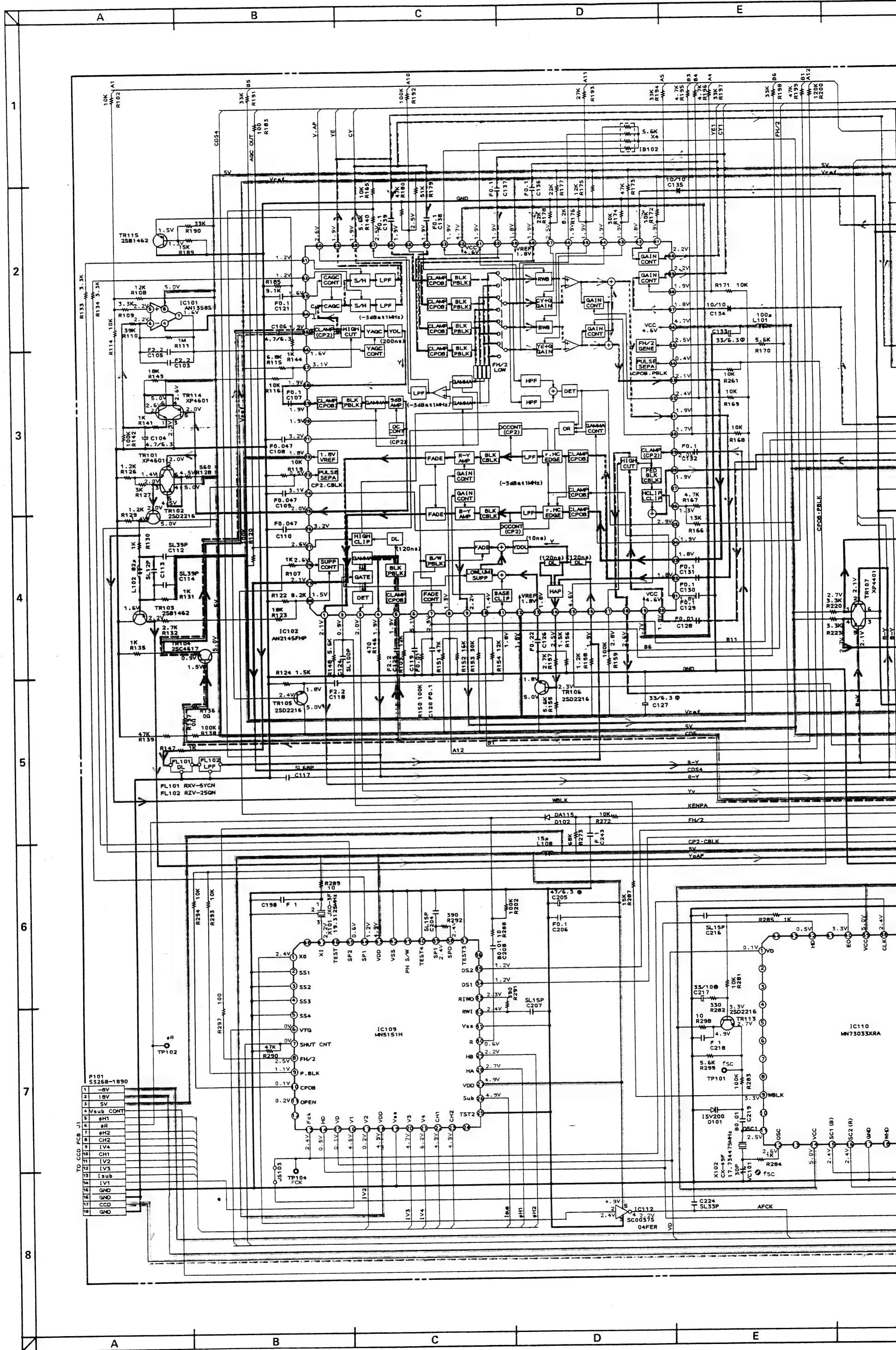
TRANSISTORS  
 TR313 ..... B1  
 TR318 ..... D2  
 TR319 ..... C4  
 TR320 ..... C3  
 TR321 ..... C4  
 TR322 ..... C3  
 TR323 ..... C3  
 TR324 ..... D3  
 TR325 ..... B1

VOLUME  
 VR301 ..... B1

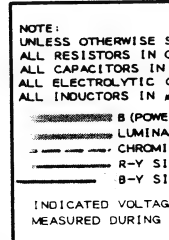
X - TAL  
 X302 ..... A1

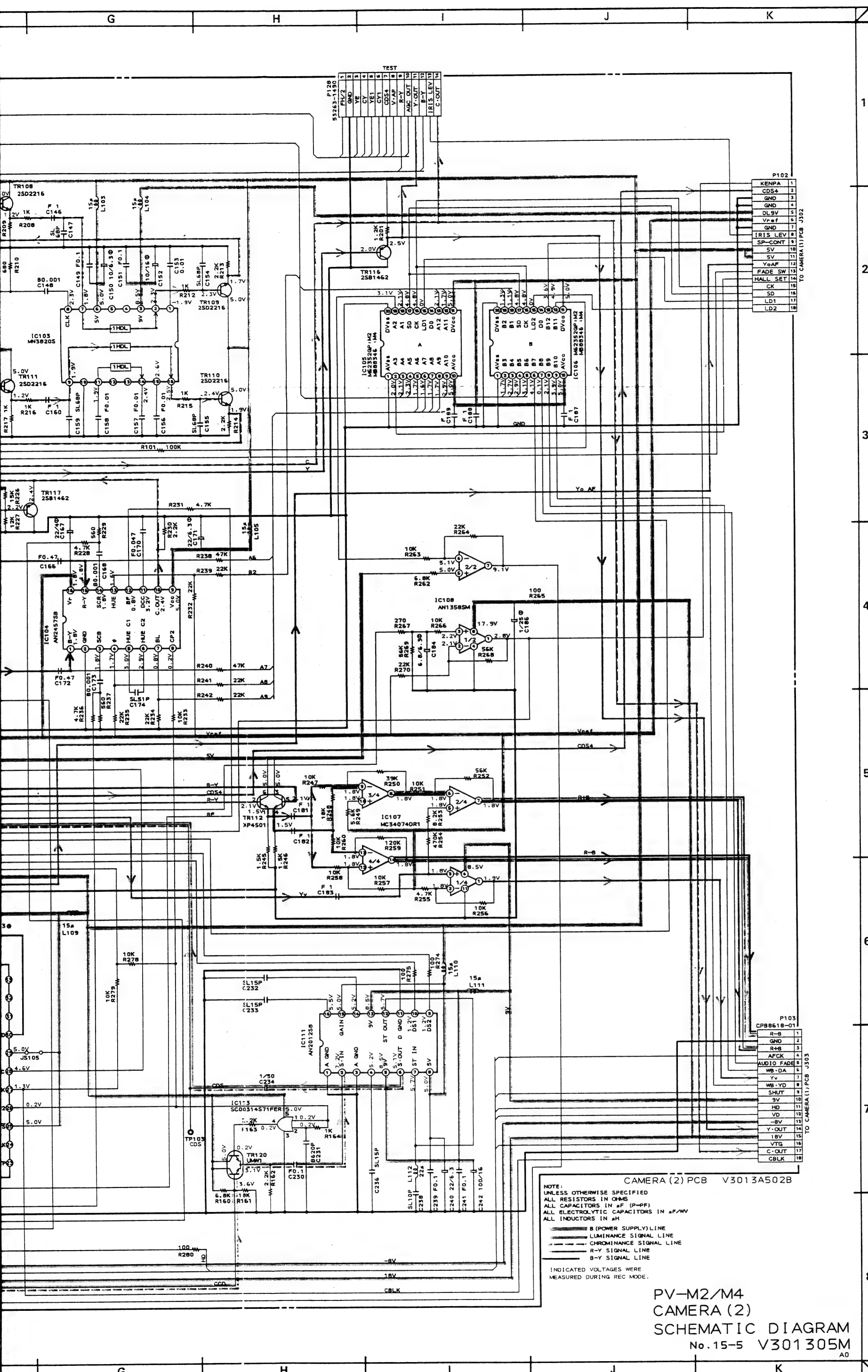
CONNECTORs  
 J302 ..... A3  
 J303 ..... D3  
 P304 ..... A5,6













XP4601  
(PNP & NPN)  
NPNC  
PNP.B  
PNP.E  
5C  
NPNE  
NPNE.B  
PNP.C  
(TR101,TR114)

XP4401  
(PNP x 2)  
1C  
2B  
2E  
5K  
1E  
1B  
2C  
(TR107)

A

B

C

# PRINCIPAL PARTS LOCATION

## ICs

IC101 ..... B,C3  
IC103 ..... C3  
IC106 ..... C1  
IC108 ..... C1  
IC109 ..... A2  
IC110 ..... A,B3  
IC111 ..... B1,2  
IC112 ..... A2

## DIODE

D102 ..... A2

## INDUCTORS

L101 ..... C3  
L105 ..... C1  
L110 ..... A1  
L111 ..... A2  
L112 ..... A1,2

## CONNECTORS

P101 ..... A1  
P102 ..... C2  
P103 ..... A2

## INTEGRATED BLOCK

IB102 ..... C3

## TRANSISTORS

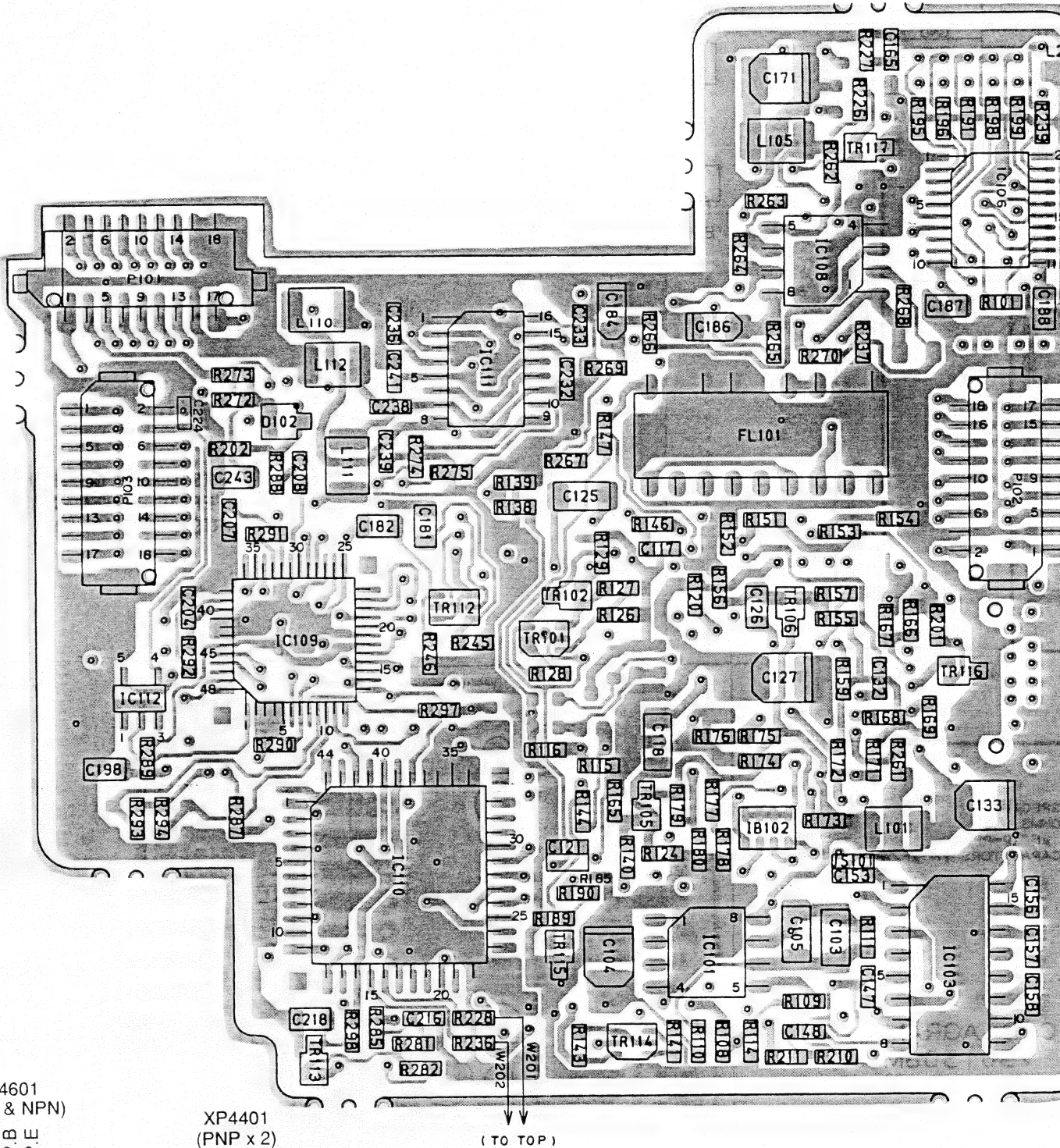
TR101 ..... B2  
TR102 ..... B2  
TR105 ..... B2  
TR106 ..... C2  
TR112 ..... B2  
TR113 ..... A3  
TR114 ..... B3  
TR115 ..... B3  
TR116 ..... C2  
TR117 ..... C1

## FILTER

FL101 ..... B,C2

XP4601  
(PNP & NPN)  
NPNC  
PNP.B  
PNP.E  
5C  
NPNE  
NPNE.B  
PNP.C  
(TR101,TR114)

XP4401  
(PNP x 2)  
1C  
2B  
2E  
5K  
1E  
1B  
2C  
(TR107)

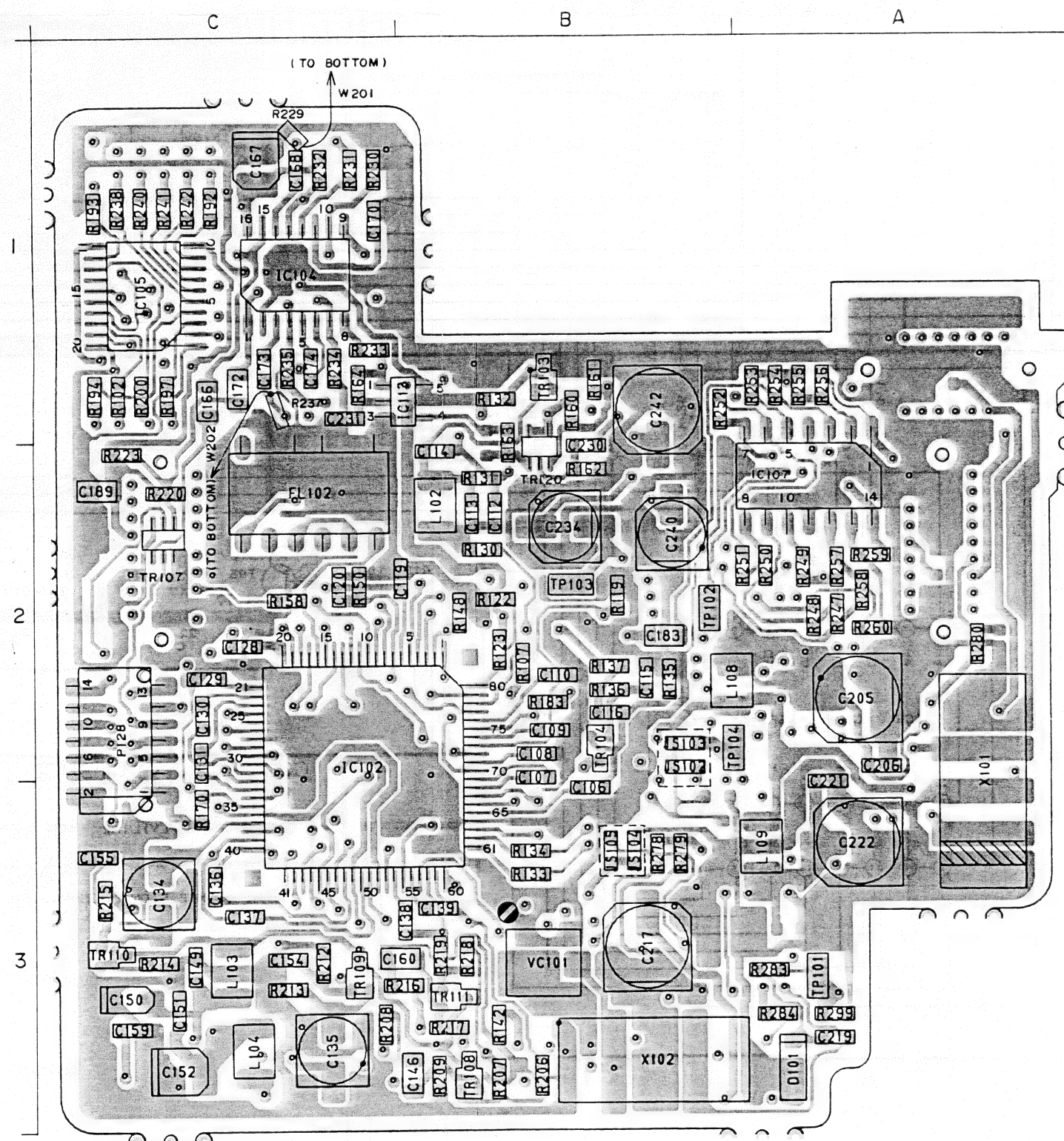
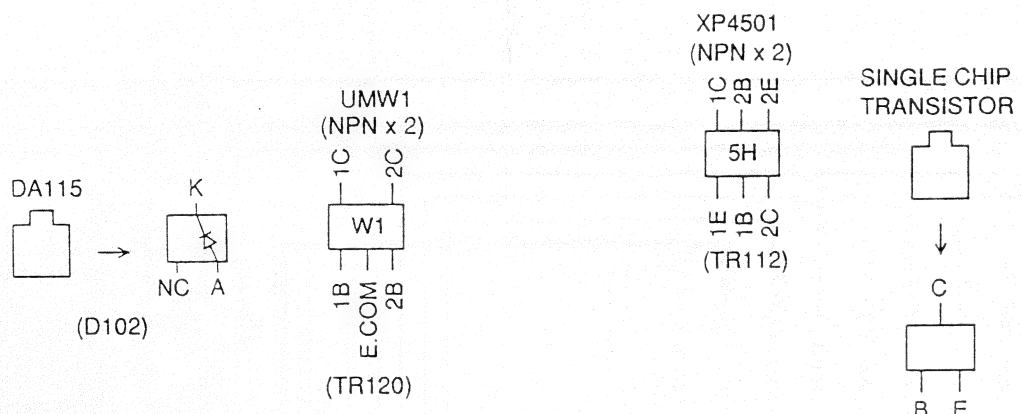


CAMERA (2) PCB V30I3A502B (BOTTOM)









### PRINCIPAL PARTS LOCATION

**ICs**  
 IC102 ..... B,C2,3  
 IC104 ..... C1  
 IC105 ..... C1  
 IC107 ..... A2  
 IC113 ..... B,C1

**DIODE**  
 D101 ..... A3

**INDUCTORS**  
 L102 ..... B2  
 L103 ..... C3  
 L104 ..... C3  
 L108 ..... A,B2  
 L109 ..... A3

**CONNECTORS**  
 P128 ..... C2,3

**TEST POINTs**  
 TP101 ..... A3  
 TP102 ..... B2  
 TP103 ..... B2  
 TP104 ..... A,B3

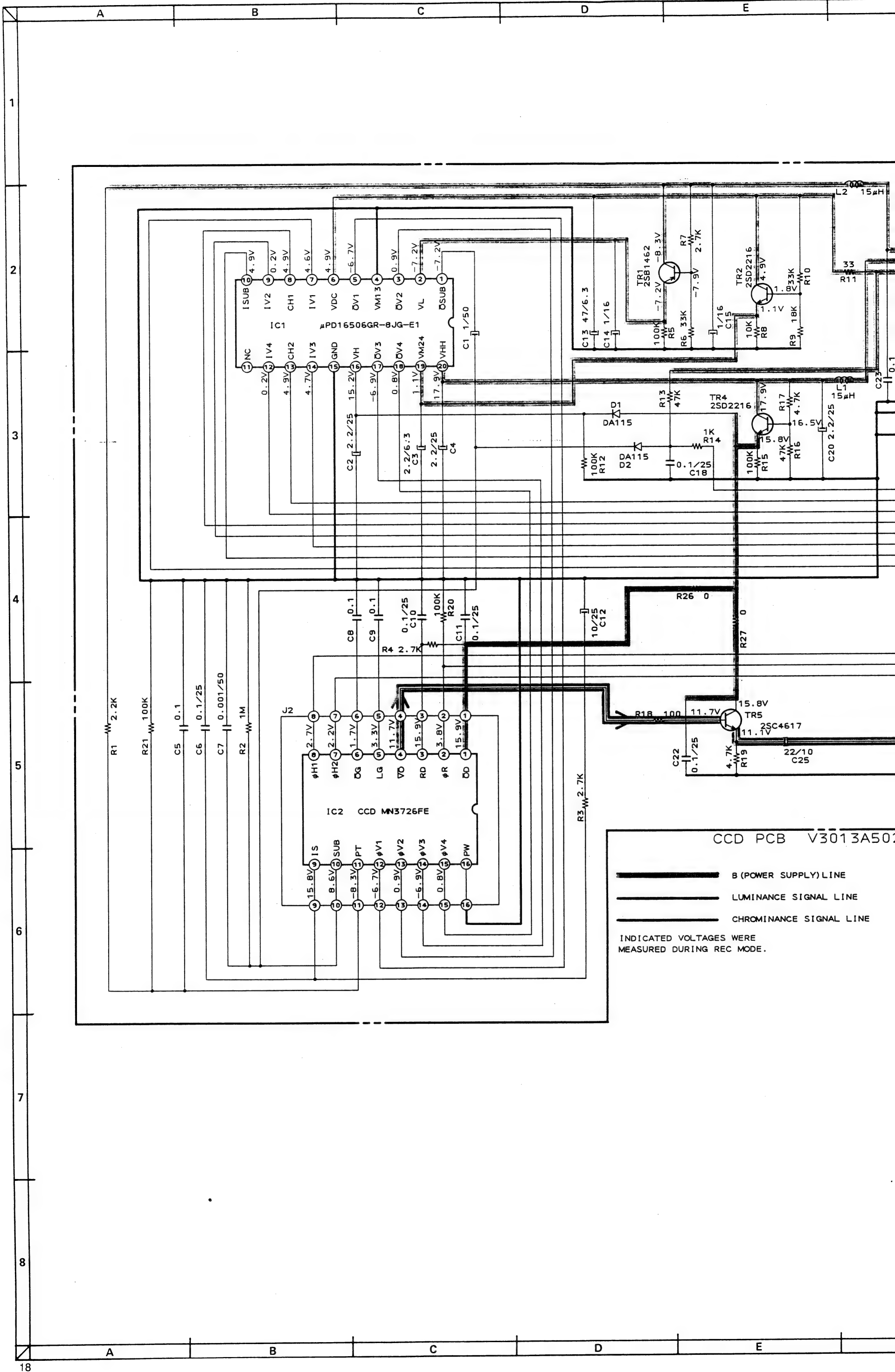
**TRANSISTORS**  
 TR103 ..... B1  
 TR104 ..... B2  
 TR107 ..... C2  
 TR108 ..... B3  
 TR109 ..... C3  
 TR110 ..... C3  
 TR111 ..... B3  
 TR120 ..... B2

**X - TALs**  
 X101 ..... A2,3  
 X102 ..... B3

**FILTER**  
 FL102 ..... C2

CAMERA (2) PCB V30I3A502B (TOP)

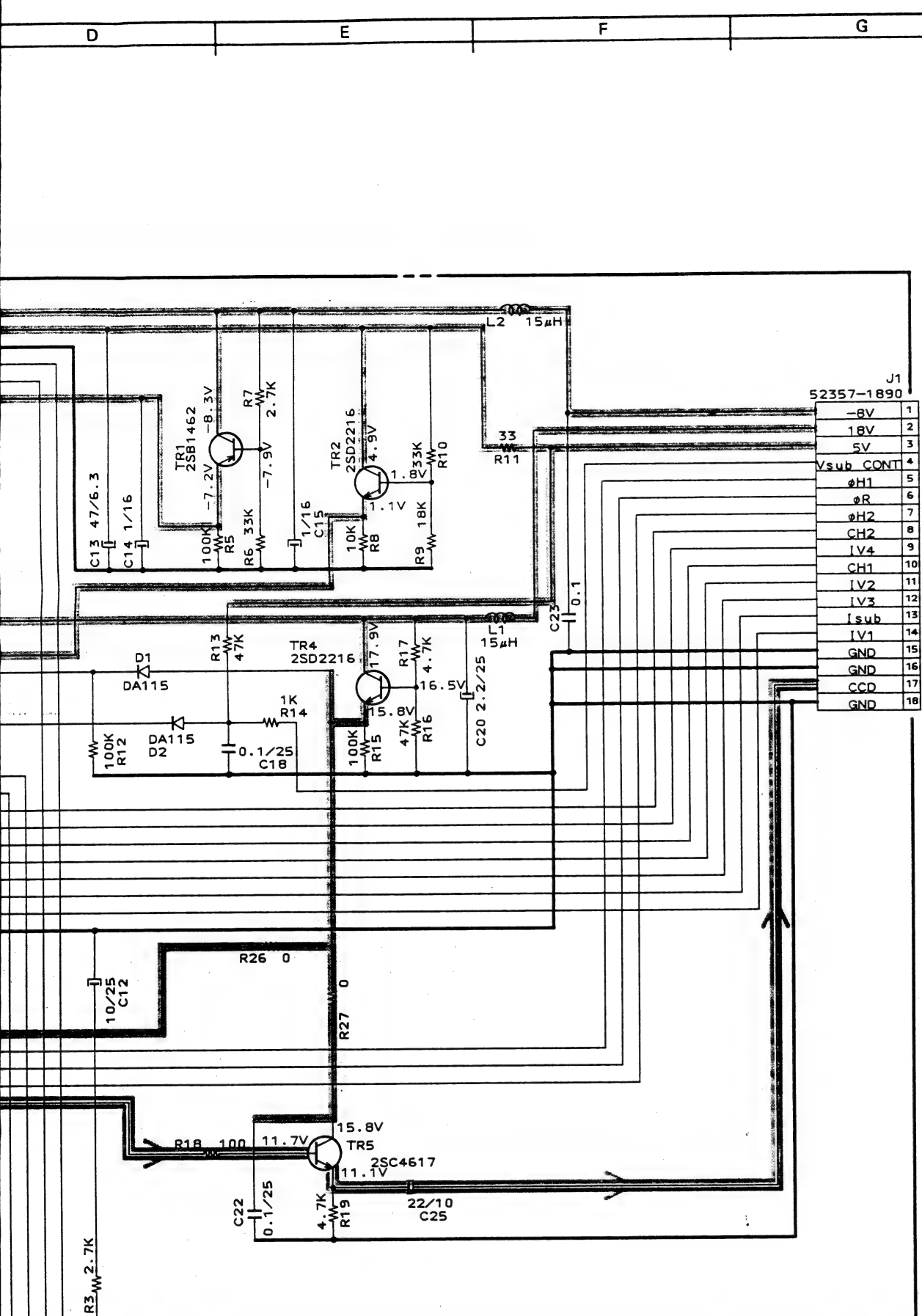
NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER.  
 REFER TO SCHEMATIC DIAGRAMS FOR PERTAINING  
 PARTS INFORMATION.



CCD PCB V3013A50

- B (POWER SUPPLY) LINE
- LUMINANCE SIGNAL LINE
- CHROMINANCE SIGNAL LINE

INDICATED VOLTAGES WERE MEASURED DURING REC MODE.

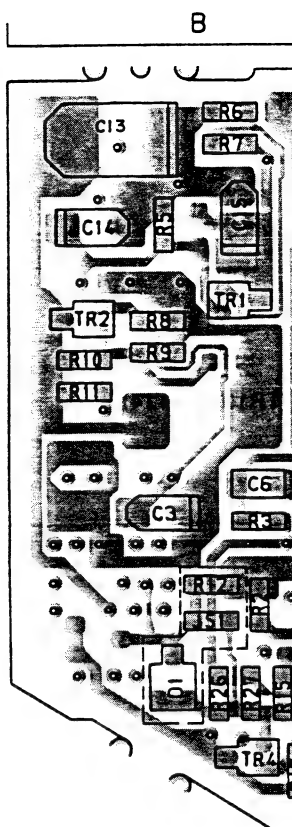
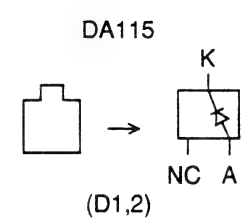
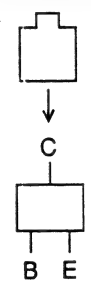


**PRINCIPAL PARTS LOCATION**

- DIODES**  
 D1 ..... B3  
 D2 ..... A3

- TRANSISTORS**  
 TR1 ..... B2  
 TR2 ..... B2  
 TR4 ..... B3

**SINGLE CHIP TRANSISTOR**



CCD PCB

NOTE: PARTS DIFFER  
 REFER TO SCH  
 PARTS INFORM

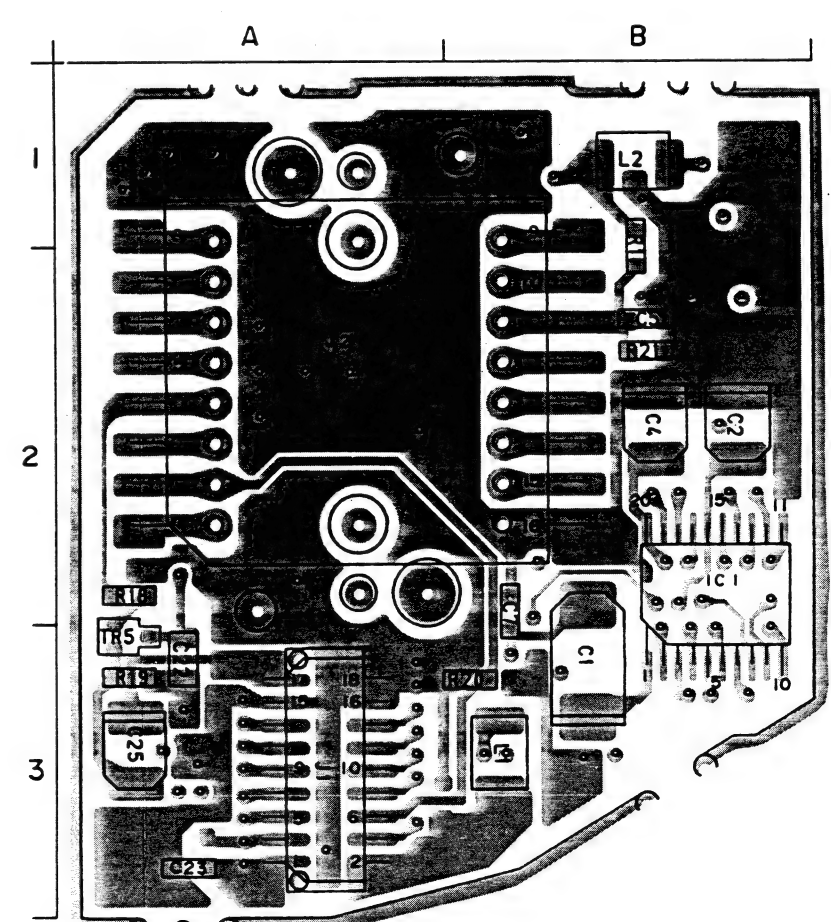
CCD PCB V3013A502C

- B (POWER SUPPLY) LINE
- LUMINANCE SIGNAL LINE
- CHROMINANCE SIGNAL LINE

INDICATED VOLTAGES WERE  
 MEASURED DURING REC MODE.

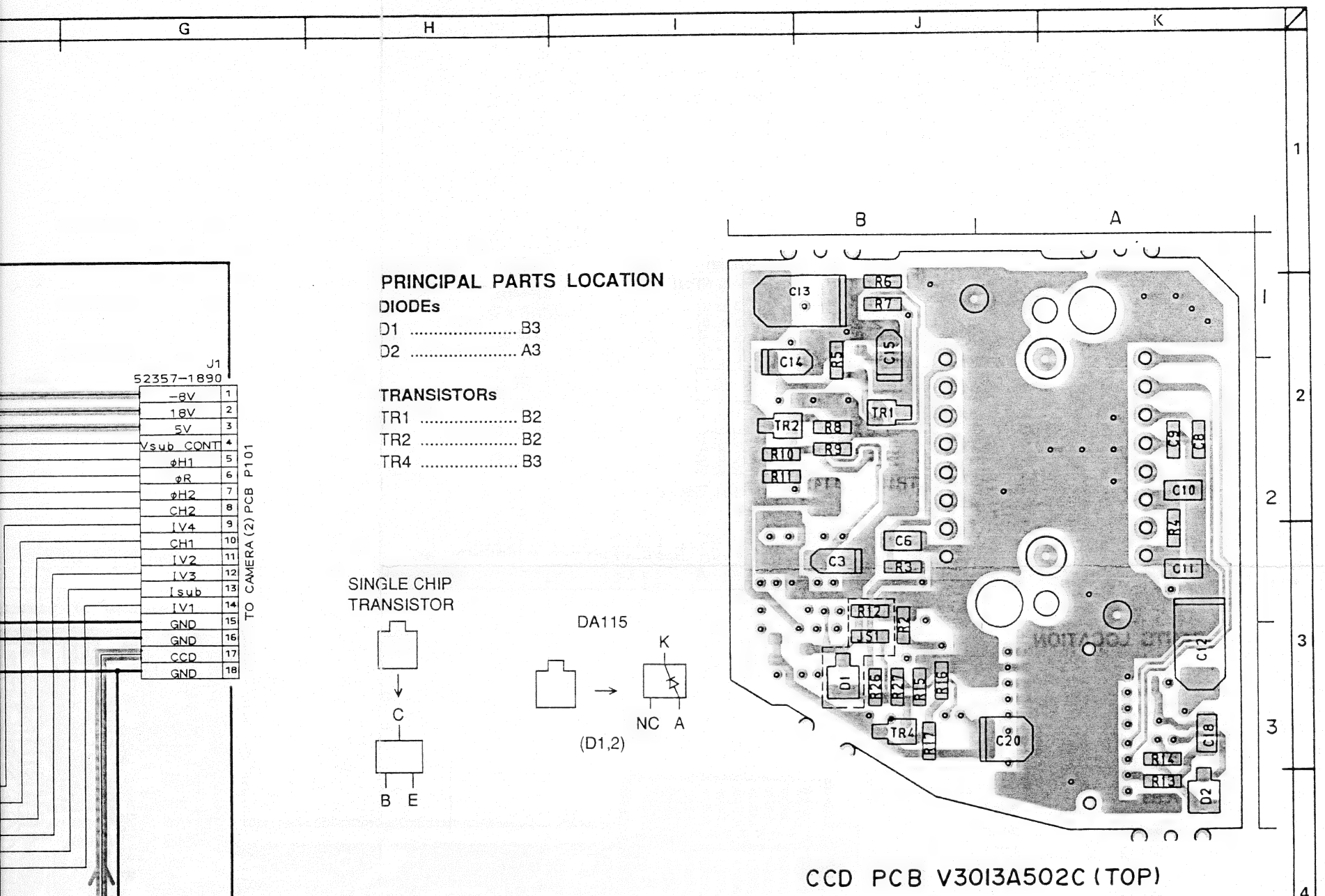
NOTE:  
 UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS  
 ALL CAPACITORS IN  $\mu F$  (P=PF)  
 ALL ELECTROLYTIC CAPACITORS IN  $\mu F/WV$

PV-M2/M4  
 CCD  
 SCHEMATIC DIAGRAM  
 No. 15-6 V301306M  
 A2



CCD PCB V3013A502C (BOTTOM)



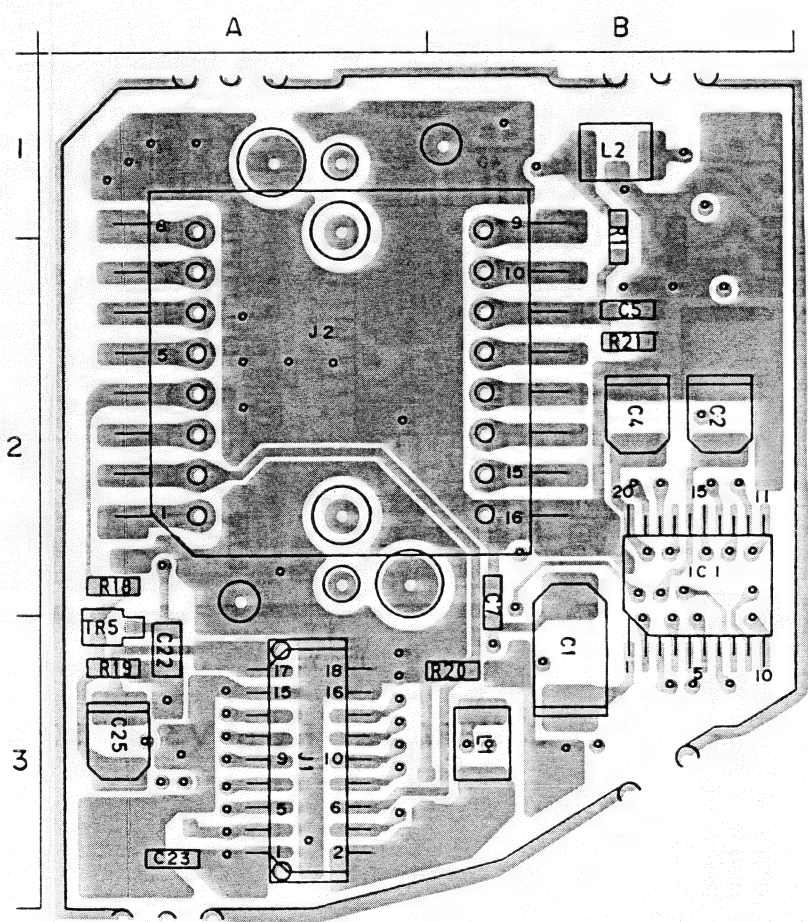


CCD PCB V30I3A502C (TOP)

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER.  
REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT  
PARTS INFORMATION.

OTHERWISE SPECIFIED  
RESISTORS IN OHMS  
CAPACITORS IN μF (P-PF)  
ELECTROLYTIC CAPACITORS IN μF/WV

M2/M4  
SCHEMATIC DIAGRAM  
No.15-6 V30I306M  
A2



CCD PCB V30I3A502C (BOTTOM)

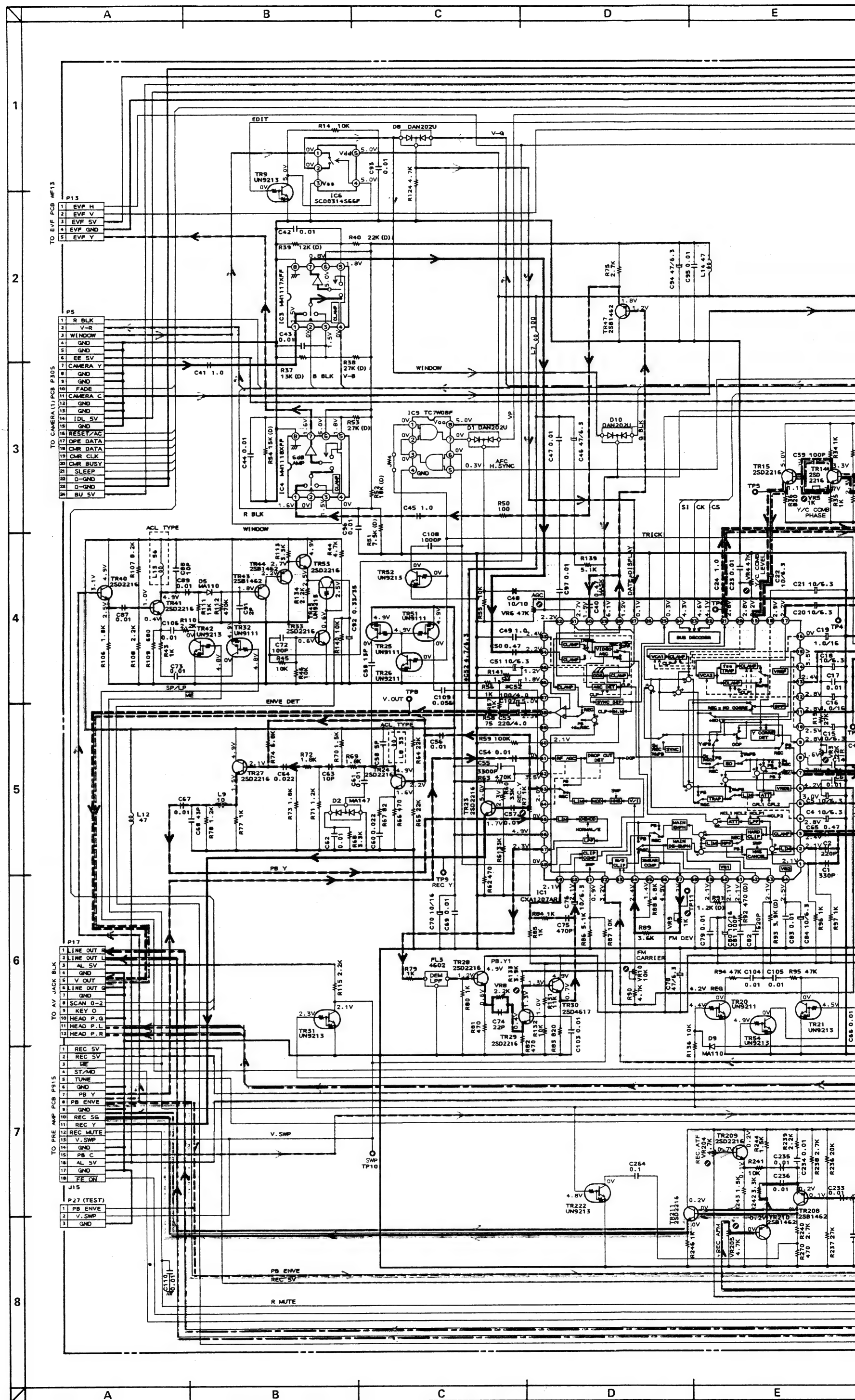
**PRINCIPAL PARTS LOCATION**

**IC**  
IC1 ..... B2,3

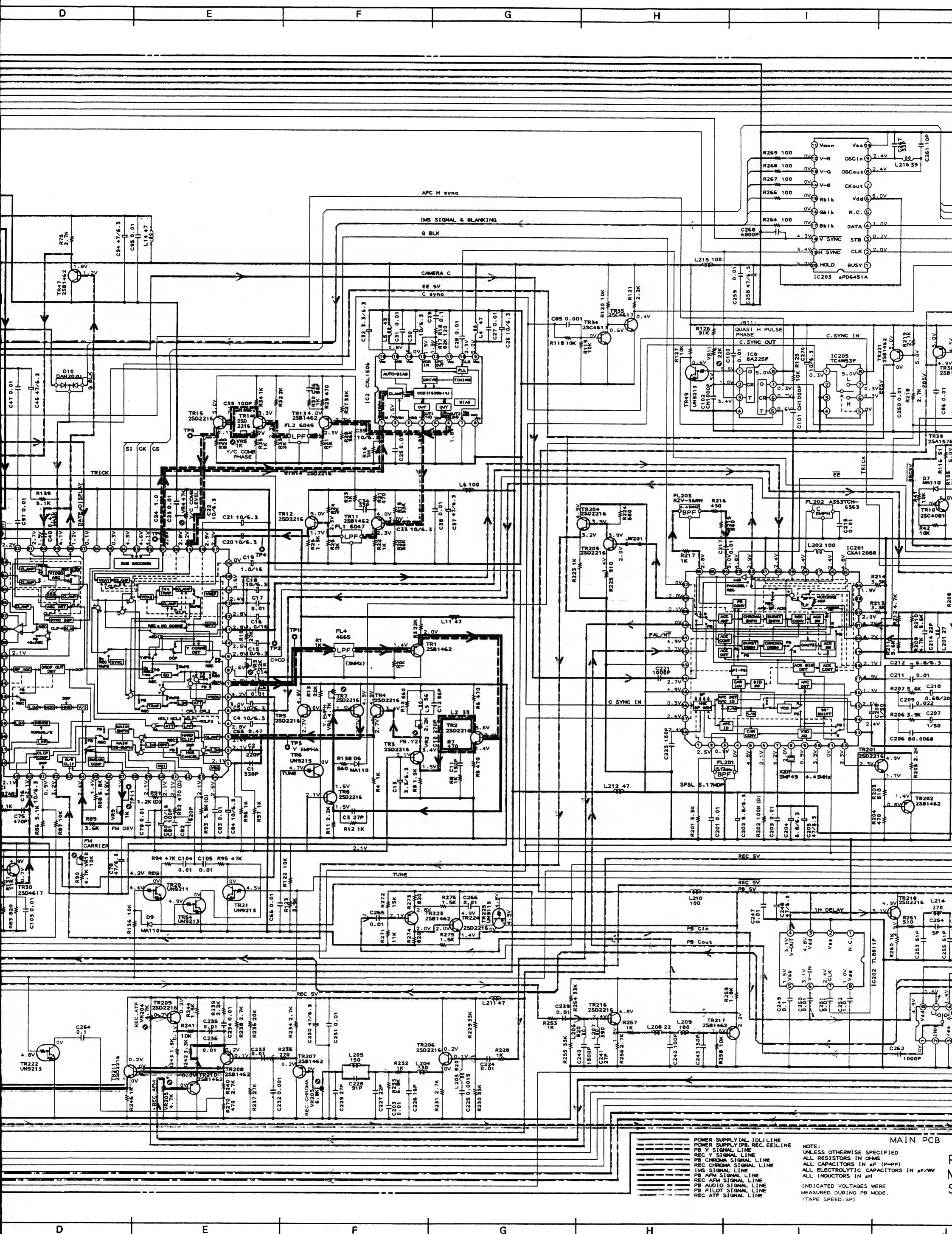
**CONNECTORS**  
J1 ..... A3  
J2 ..... A2

**INDUCTORS**  
L1 ..... B3  
L2 ..... B1

**TRANSISTOR**  
TR5 ..... A3







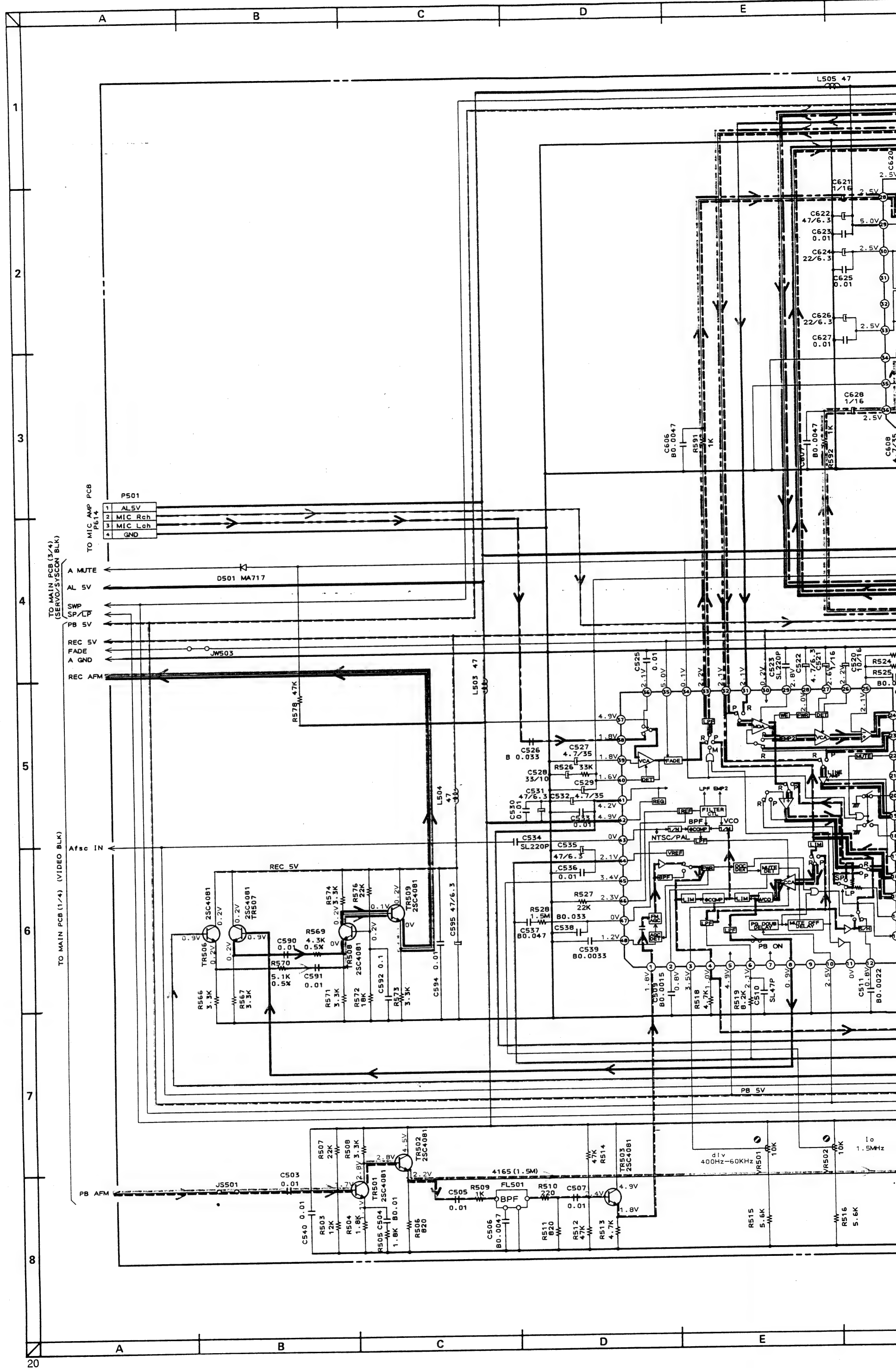


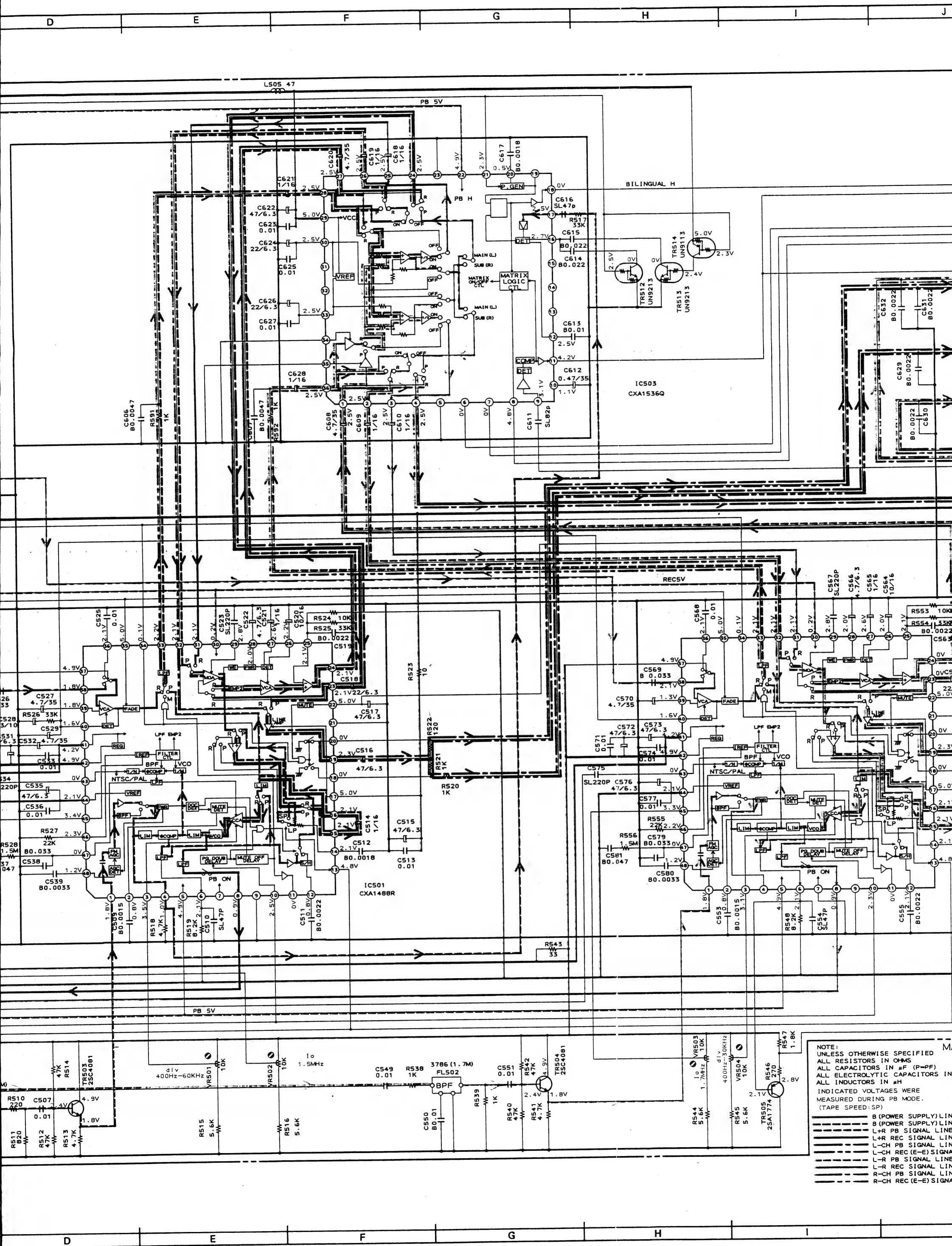
NOTE:  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS  
ALL CAPACITORS IN  $\mu\text{F}$  (p=PF)  
ALL ELECTROLYTIC CAPACITORS  
ALL INDUCTORS IN  $\mu\text{H}$

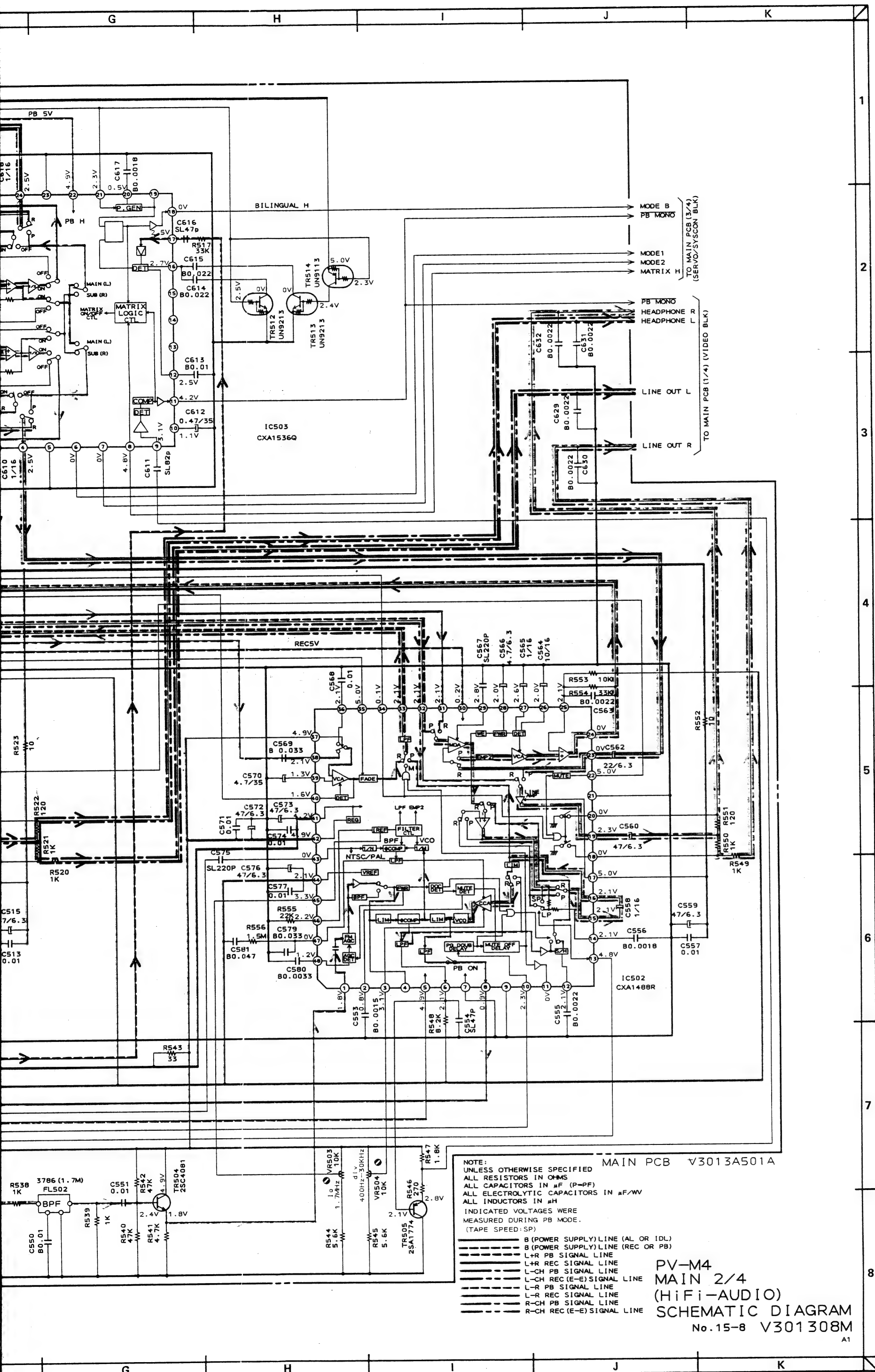
INDICATED VOLTAGES WERE  
MEASURED DURING PB MODE.  
(TAPE SPEED: SP)

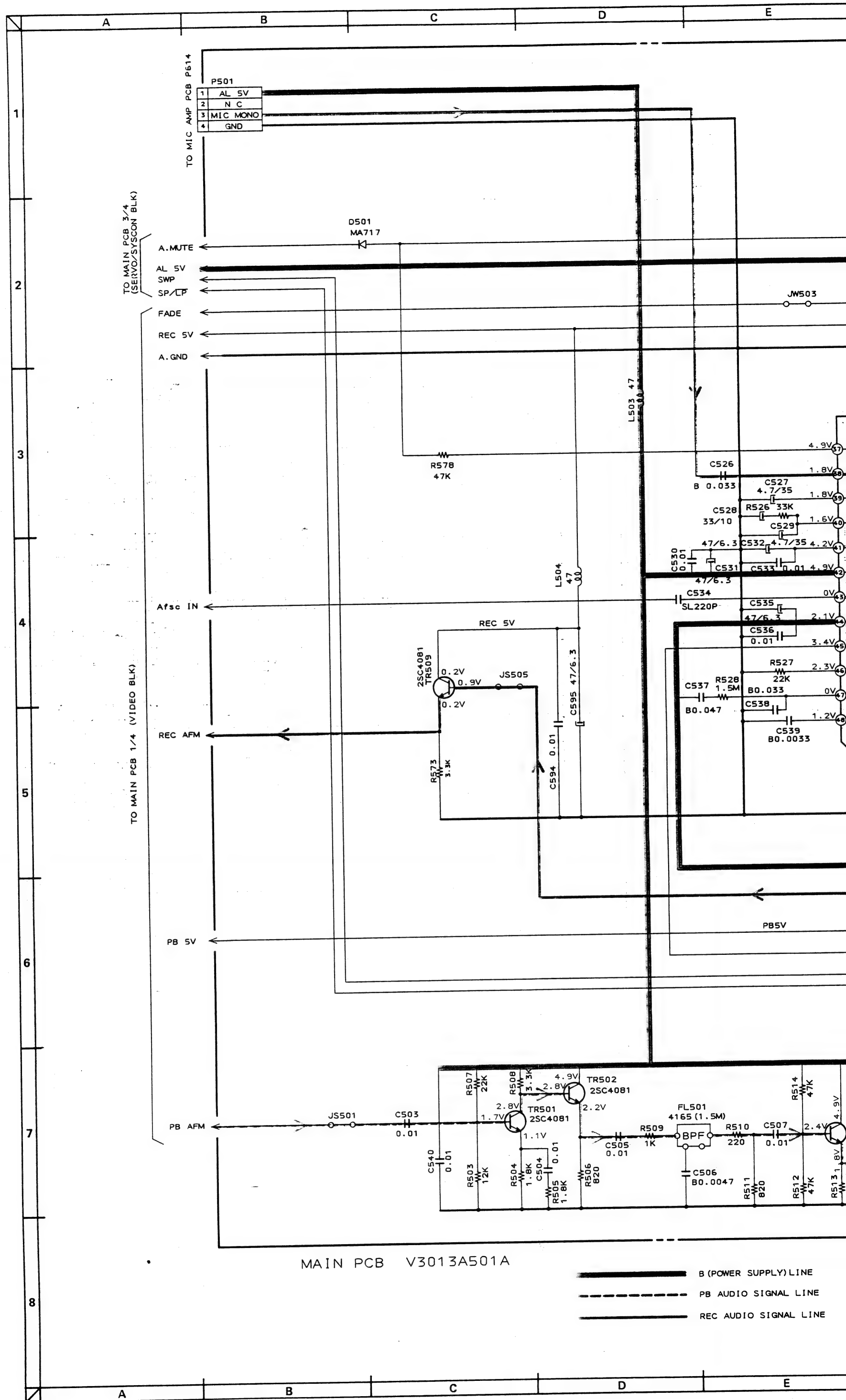
A9



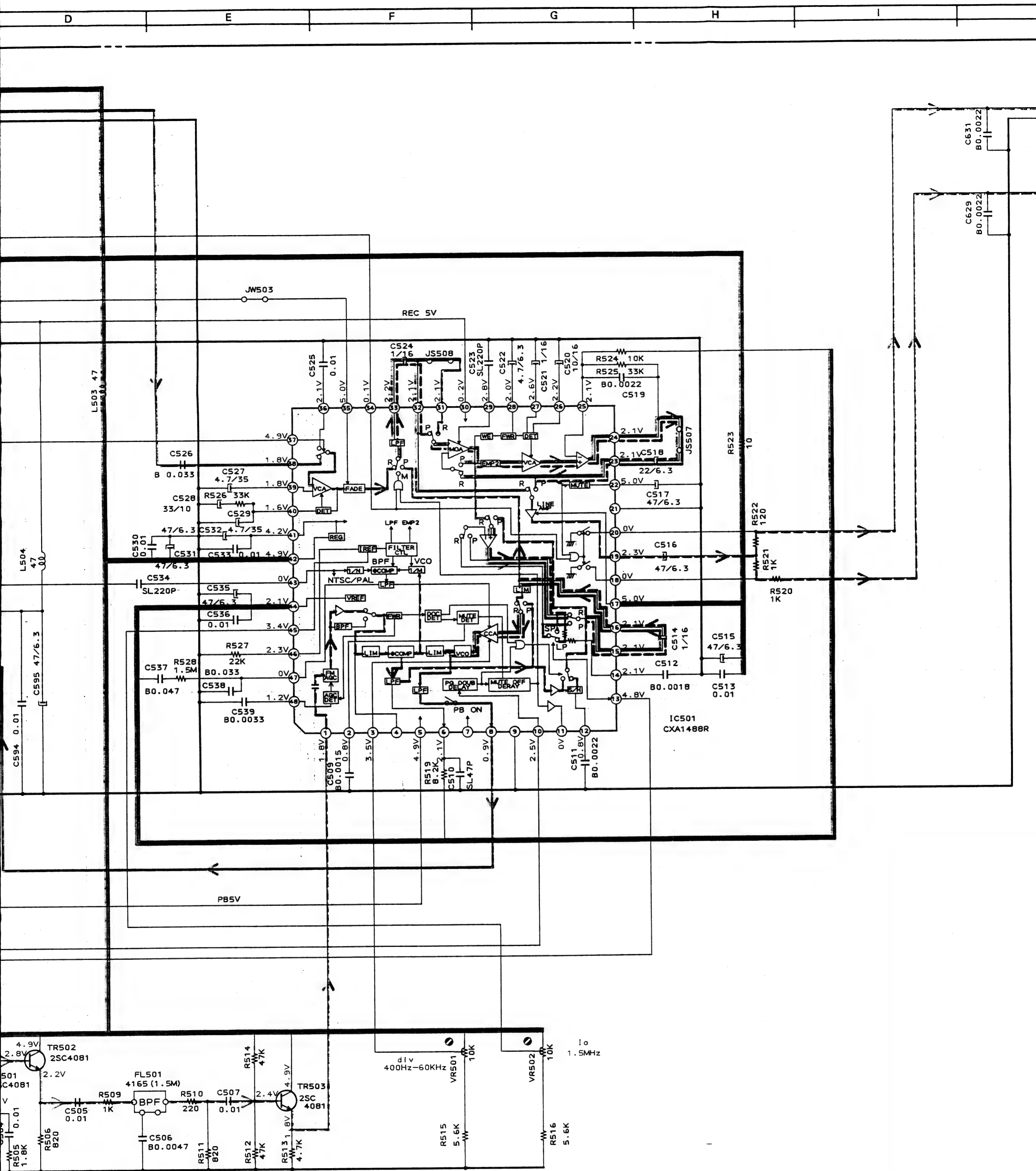








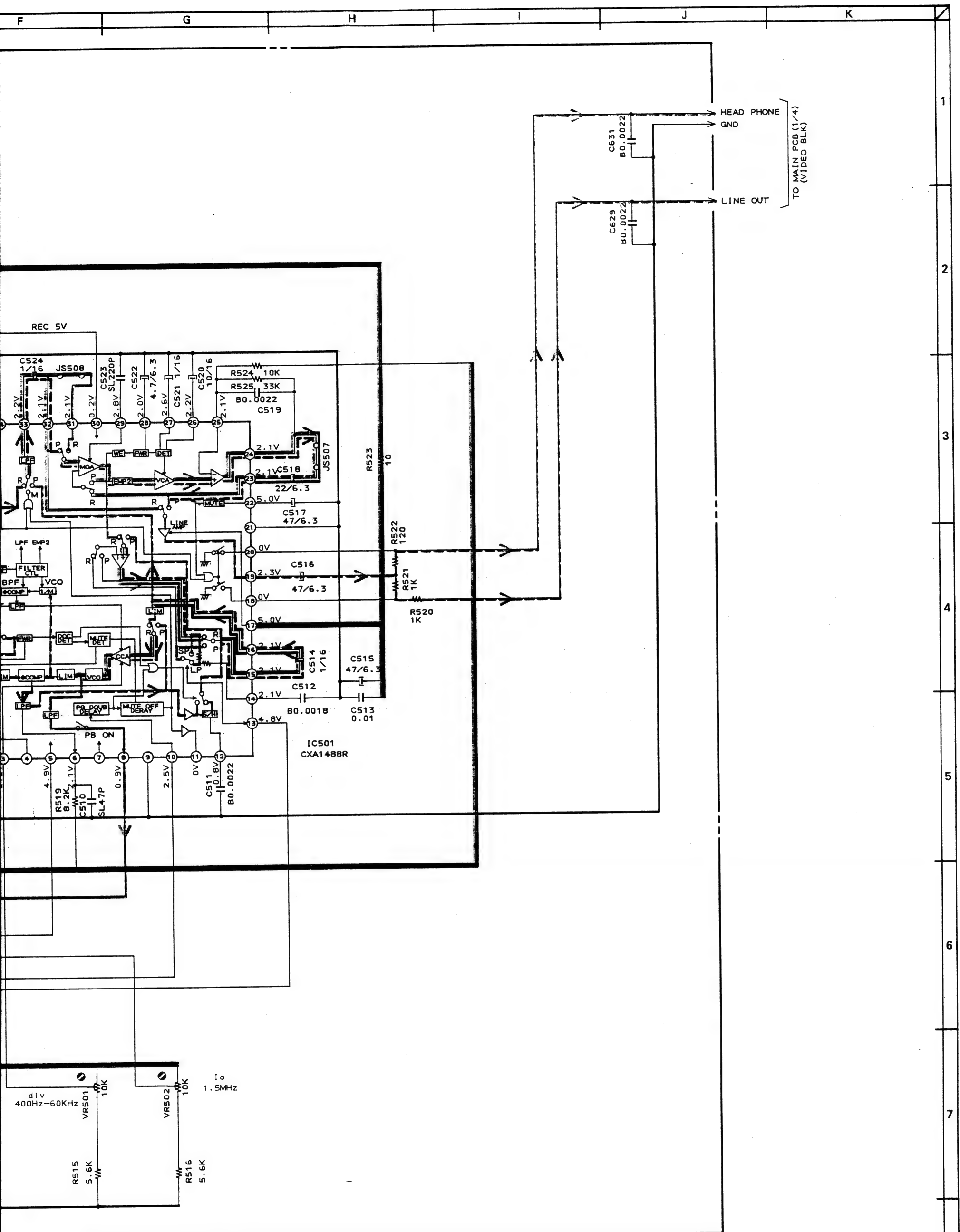




NOTE:  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS  
ALL CAPACITORS IN  $\mu F$  (P-PF)  
ALL ELECTROLYTIC CAPACITORS IN  $\mu F/W$   
ALL INDUCTORS IN  $\mu H$

INDICATED VOLTAGES WERE  
MEASURED DURING PB MODE.  
(TAPE SPEED: SP)

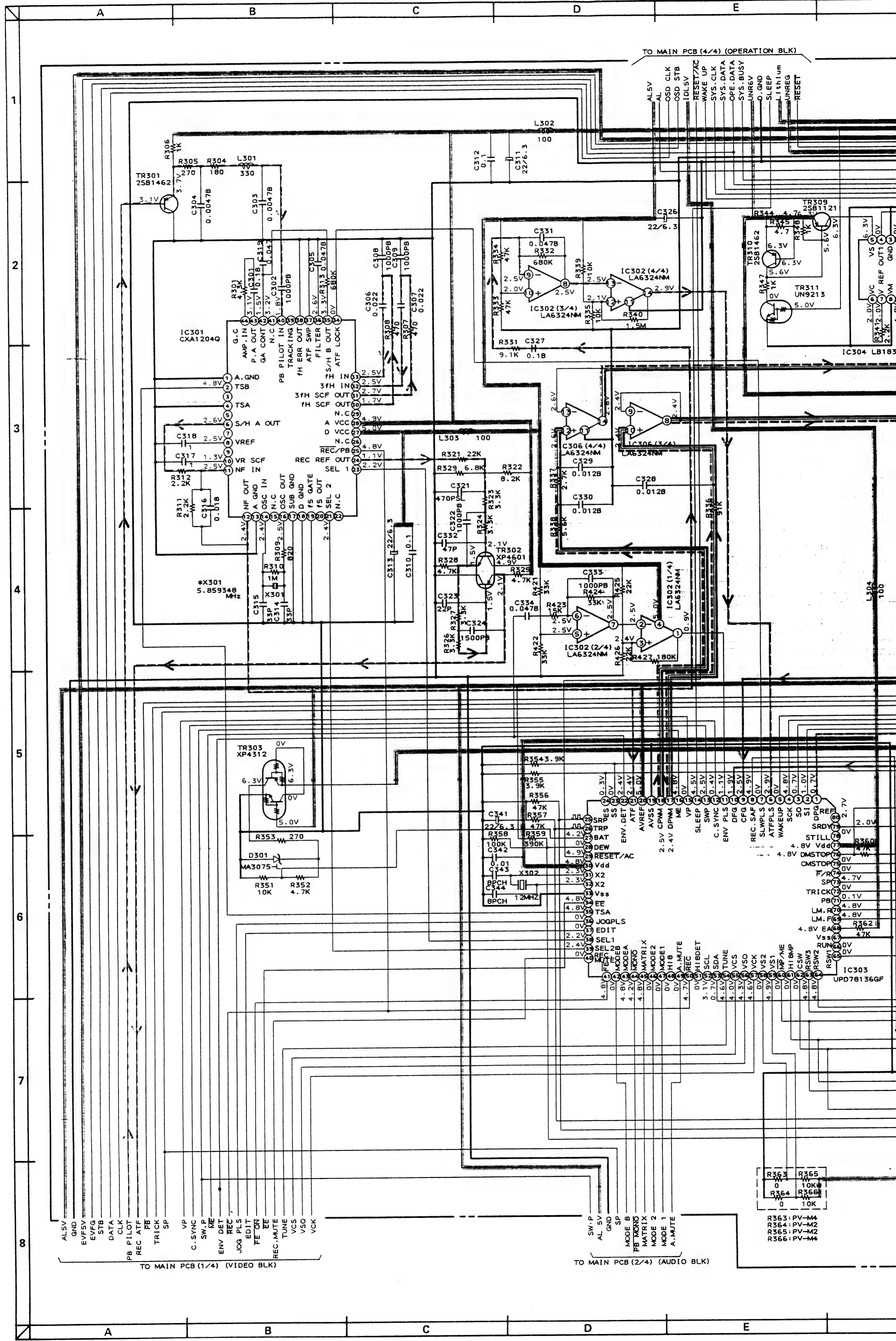
PV-M2  
MAIN 2/4  
HiFi-AUDIO-MON  
SCHEMATIC DIAG  
No.15-9 V3013



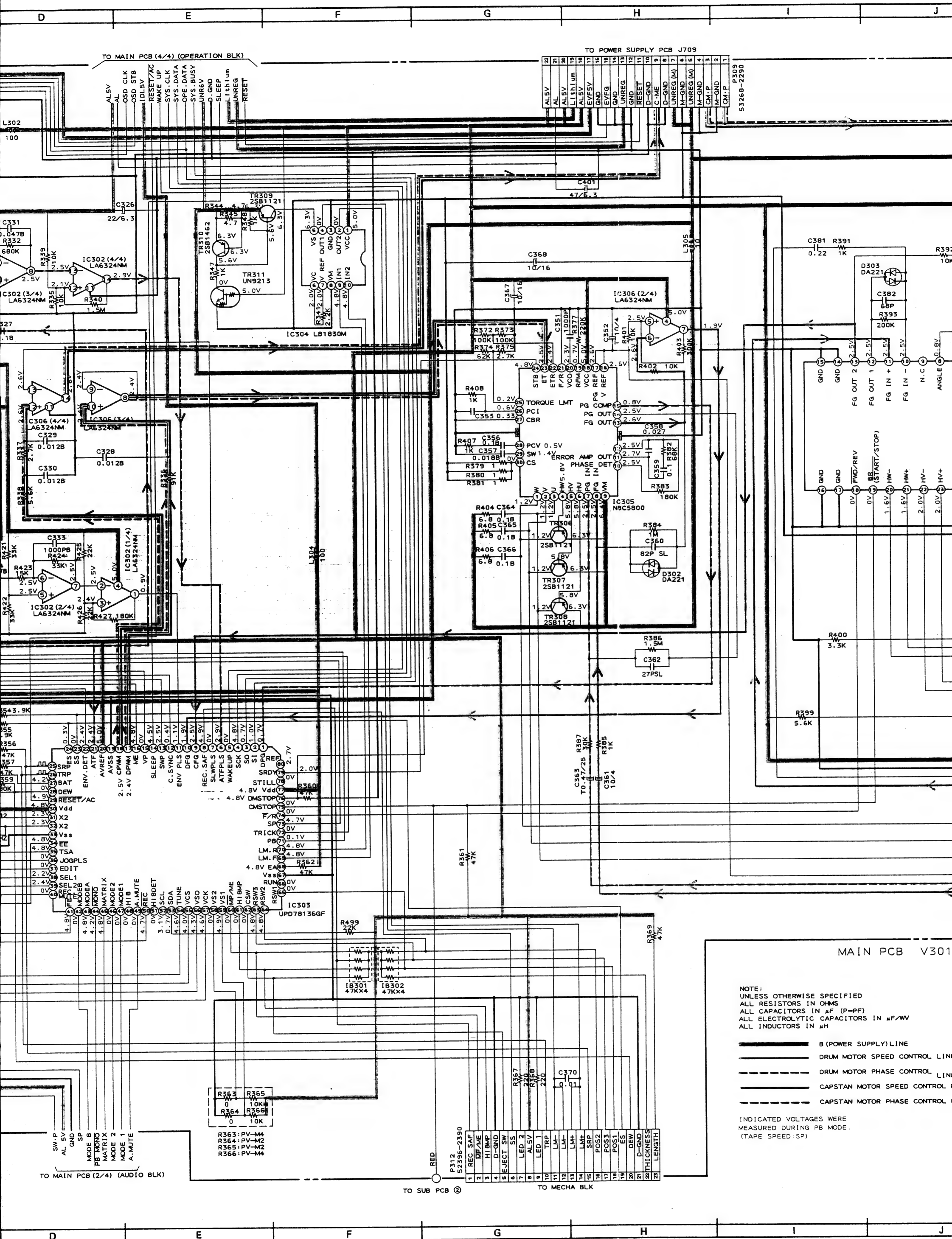
NOTE:  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS  
ALL CAPACITORS IN  $\mu F$  (P=PF)  
ALL ELECTROLYTIC CAPACITORS IN  $\mu F/W$   
ALL INDUCTORS IN  $\mu H$

INDICATED VOLTAGES WERE  
MEASURED DURING PB MODE.  
(TAPE SPEED: SP)

PV-M2  
MAIN 2/4  
(HiFi-AUDIO-MONO)  
SCHEMATIC DIAGRAM  
No.15-9 V301309M  
A1







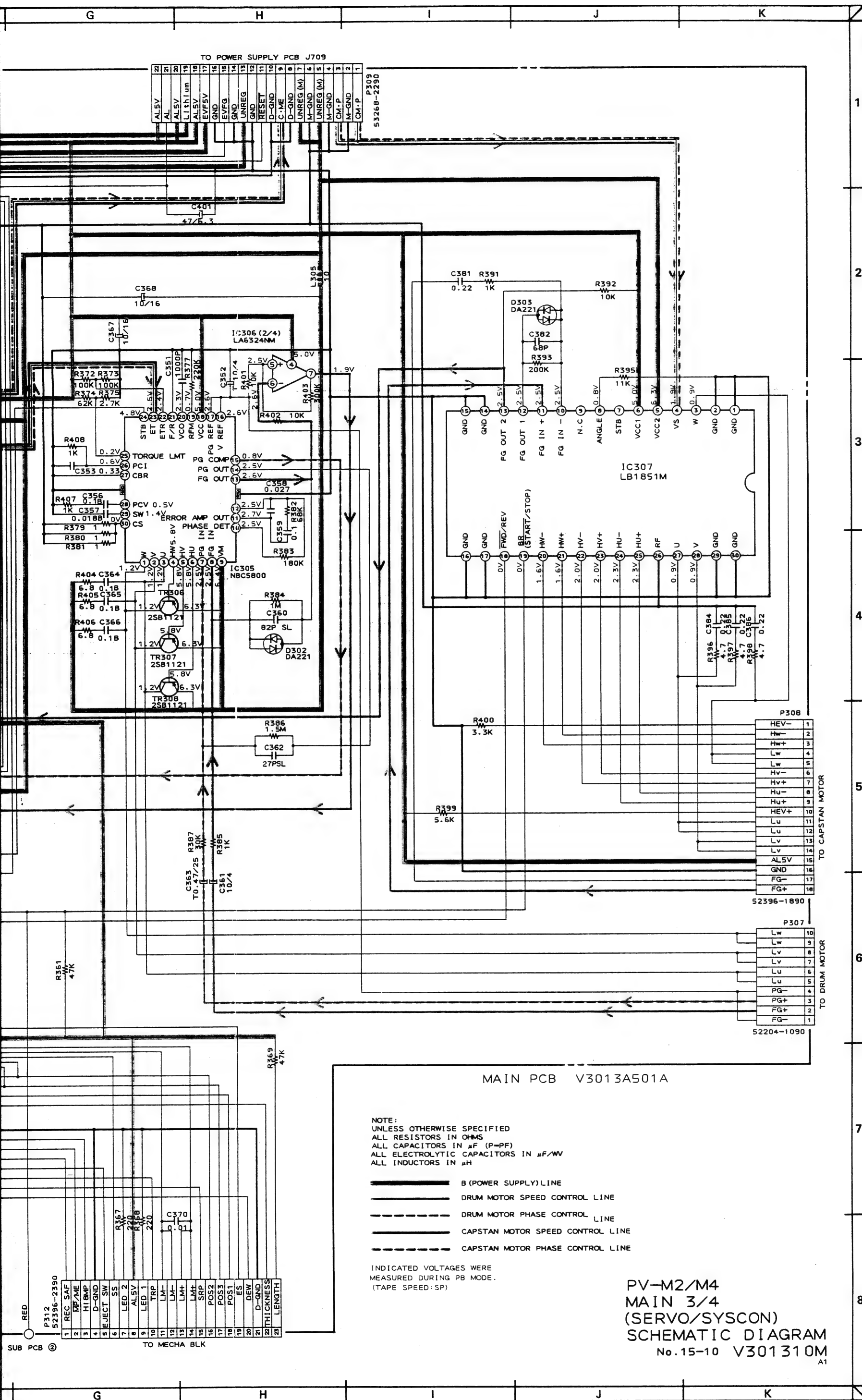
NOTE:  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS  
ALL CAPACITORS IN P-F (P-PF)  
ALL ELECTROLYTIC CAPACITORS IN  $\mu$ F/WV  
ALL INDUCTORS IN  $\mu$ H

- B (POWER SUPPLY) LINE
- DRUM MOTOR SPEED CONTROL LINE
- DRUM MOTOR PHASE CONTROL LINE
- CAPSTAN MOTOR SPEED CONTROL LINE
- CAPSTAN MOTOR PHASE CONTROL LINE

INDICATED VOLTAGES WERE  
MEASURED DURING PB MODE.  
(TAPE SPEED: SP)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
REC SAF	MP/ME	HI/MP	D-GND	EJECT SW	SS	LED 2	ALS	LED 1	LM	LM	LM	LM	LM	SRP	POS2	POS3	POST	ES	DEW	D-GND	LENGTH

R363	PV-M4	10K
R364	PV-M2	10K
R365	PV-M2	10K
R366	PV-M4	10K



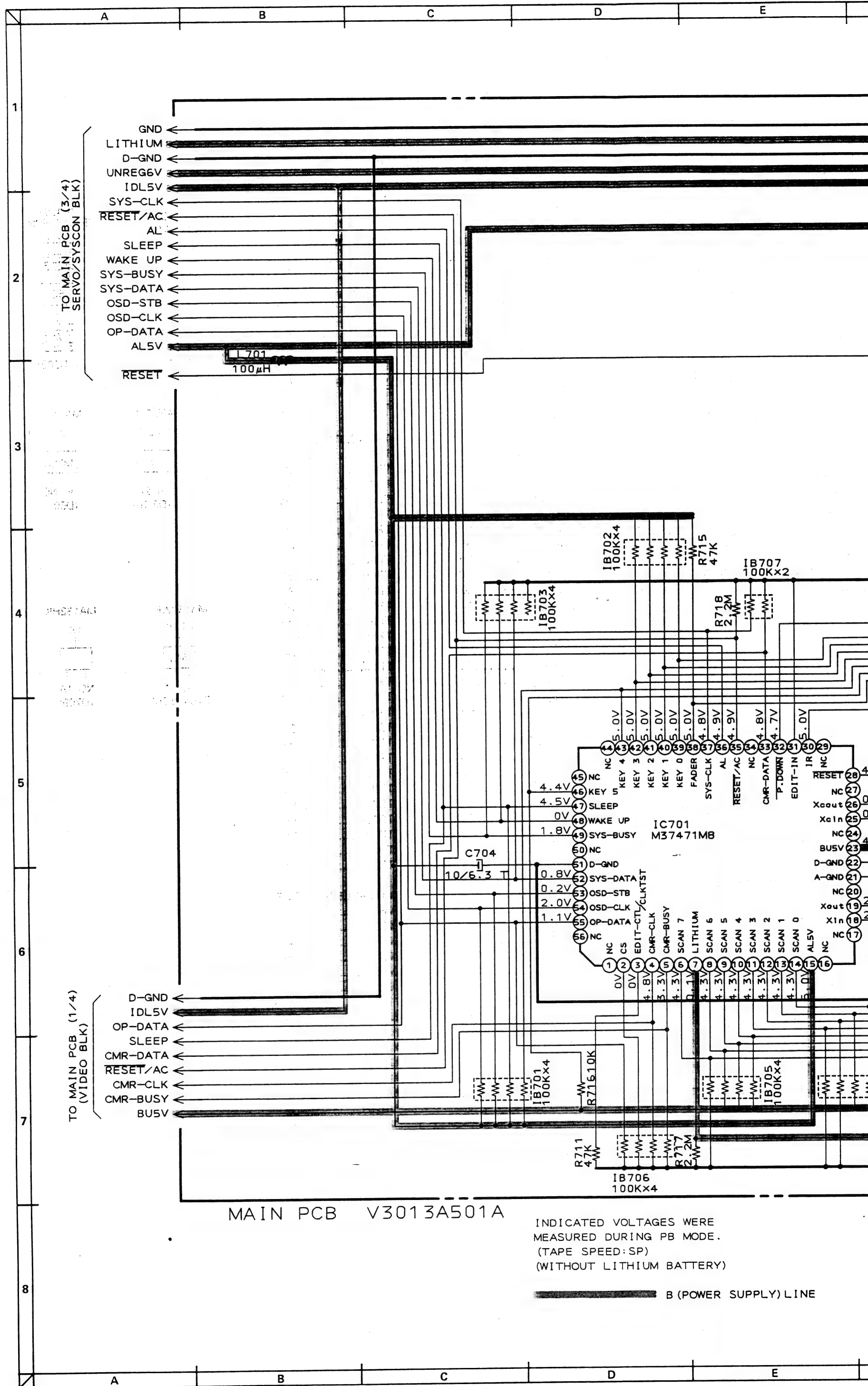
NOTE:  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS  
ALL CAPACITORS IN  $\mu$ F (P-PF)  
ALL ELECTROLYTIC CAPACITORS IN  $\mu$ F/WV  
ALL INDUCTORS IN  $\mu$ H

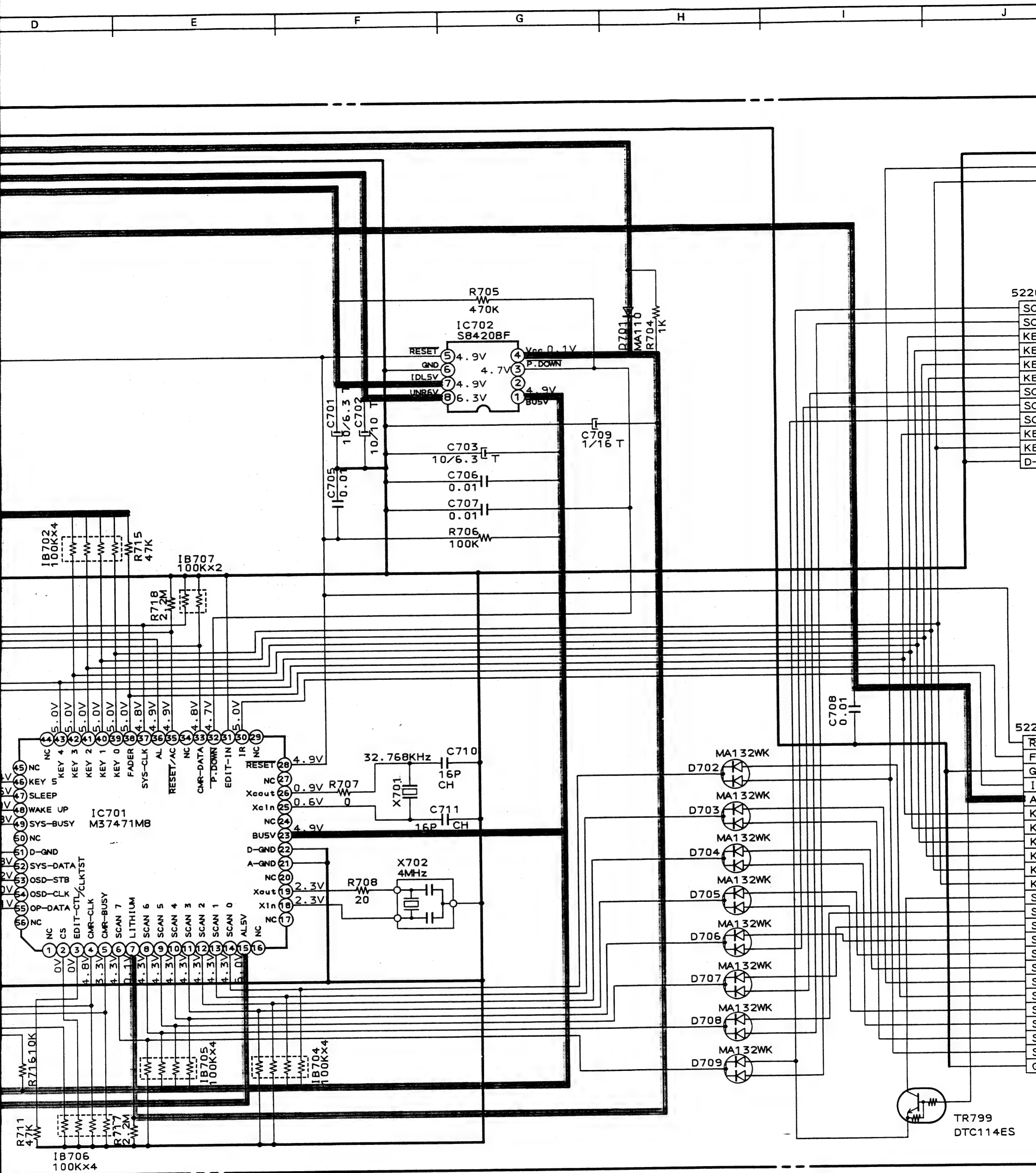
—— B (POWER SUPPLY) LINE  
- - - - DRUM MOTOR SPEED CONTROL LINE  
... DRUM MOTOR PHASE CONTROL LINE  
- . - . CAPSTAN MOTOR SPEED CONTROL LINE  
- - - - CAPSTAN MOTOR PHASE CONTROL LINE

INDICATED VOLTAGES WERE  
MEASURED DURING PB MODE.  
(TAPE SPEED: SP)

PV-M2/M4  
MAIN 3/4  
(SERVO/SYSCON)  
SCHEMATIC DIAGRAM  
No.15-10 V301310M  
A1





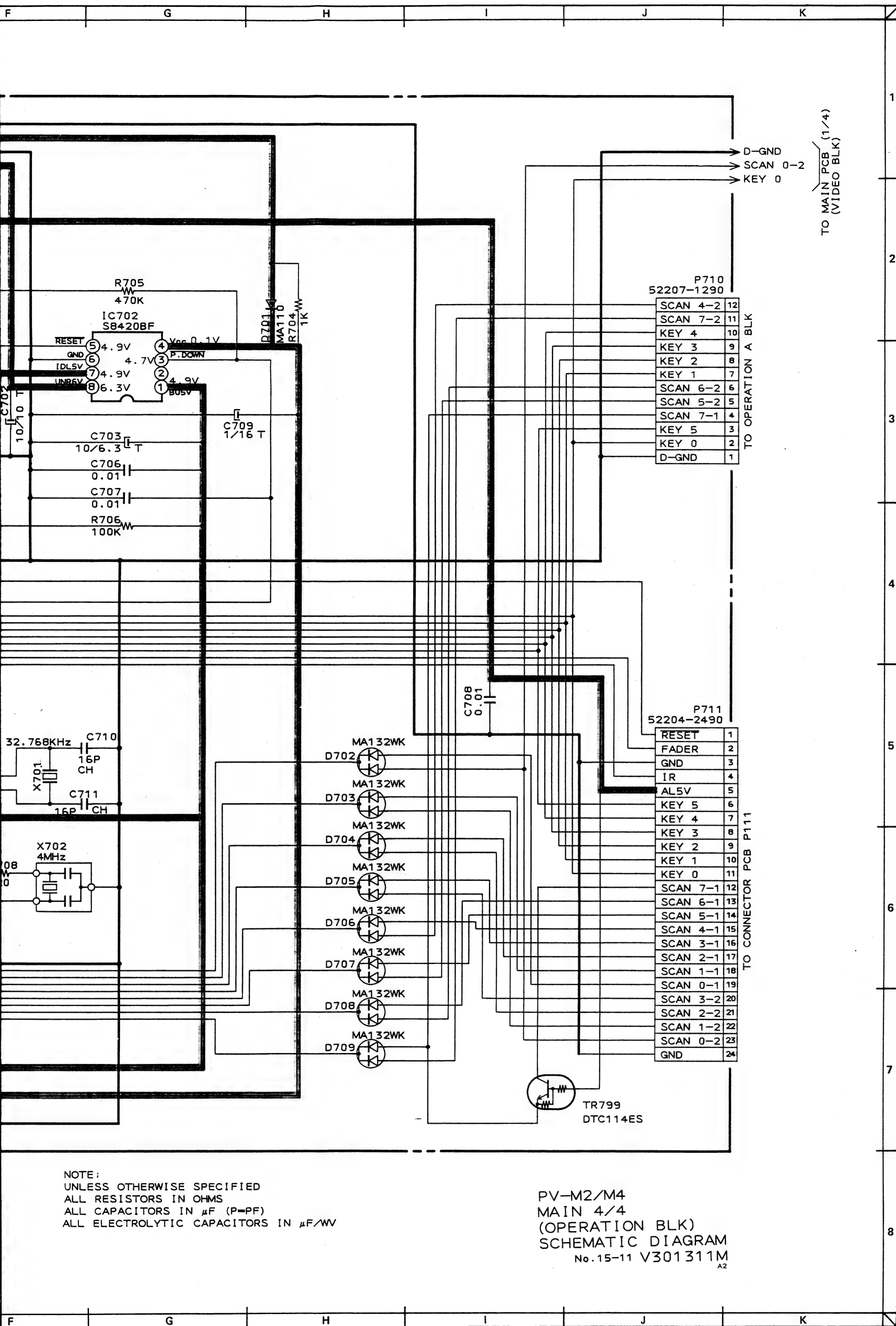


INDICATED VOLTAGES WERE  
MEASURED DURING PB MODE.  
(PE SPEED:SP)  
(WITHOUT LITHIUM BATTERY)

NOTE:  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS  
ALL CAPACITORS IN  $\mu$ F (P=PF)  
ALL ELECTROLYTIC CAPACITORS IN  $\mu$ F/VV

PV-M2/M4  
MAIN 4/4  
(OPERATION B)  
SCHEMATIC D  
No.15-11 V3

B (POWER SUPPLY) LINE



TO MAIN PCB (1/4)  
(VIDEO BLK)

P710  
52207-1290

SCAN 4-2	12
SCAN 7-2	11
KEY 4	10
KEY 3	9
KEY 2	8
KEY 1	7
SCAN 6-2	6
SCAN 5-2	5
SCAN 7-1	4
KEY 5	3
KEY 0	2
D-GND	1

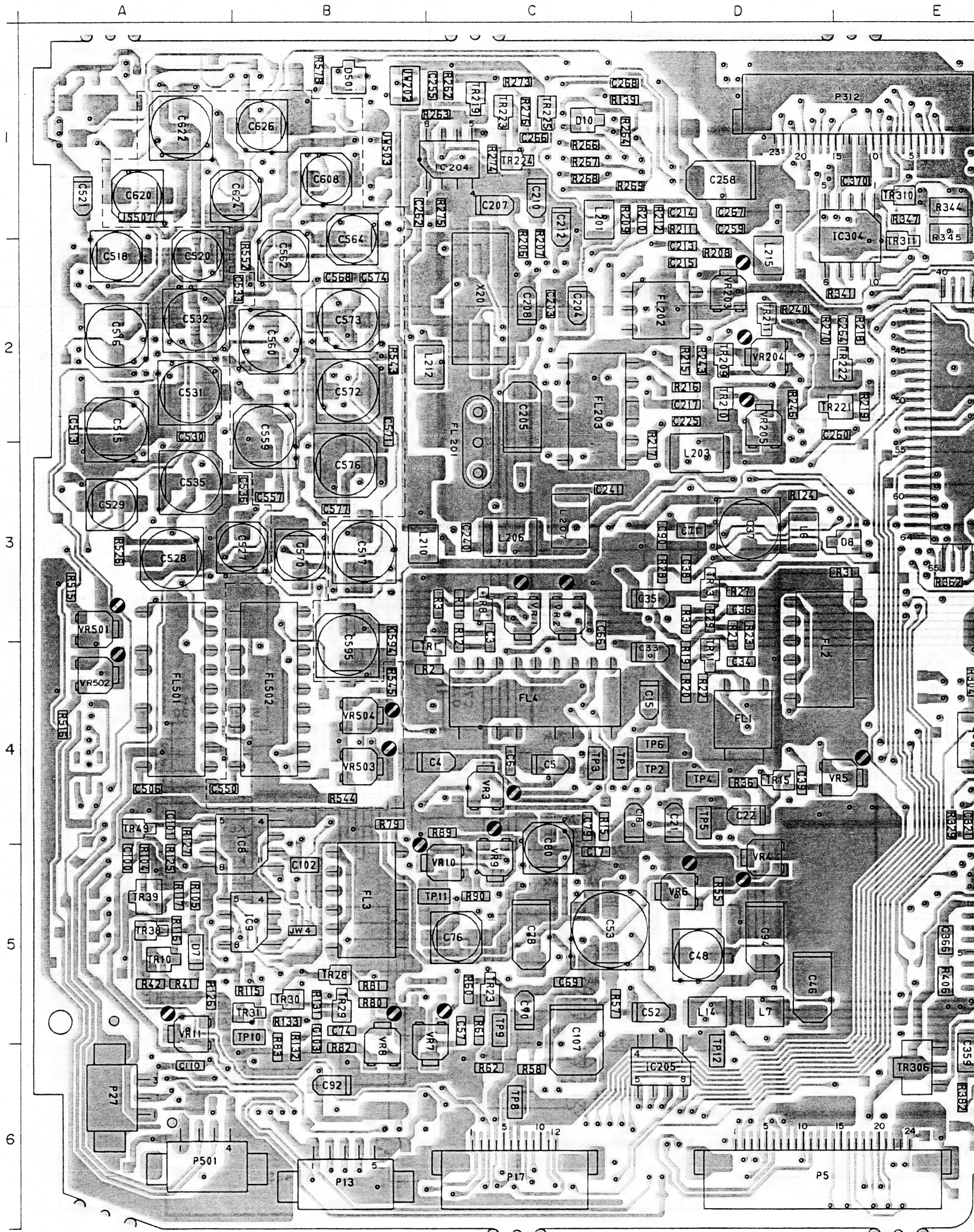
TO OPERATION A BLK

P711  
52204-2490

RESET	1
FADER	2
GND	3
IR	4
AL5V	5
KEY 5	6
KEY 4	7
KEY 3	8
KEY 2	9
KEY 1	10
KEY 0	11
SCAN 7-1	12
SCAN 6-1	13
SCAN 5-1	14
SCAN 4-1	15
SCAN 3-1	16
SCAN 2-1	17
SCAN 1-1	18
SCAN 0-1	19
SCAN 3-2	20
SCAN 2-2	21
SCAN 1-2	22
SCAN 0-2	23
GND	24

TO CONNECTOR PCB P111

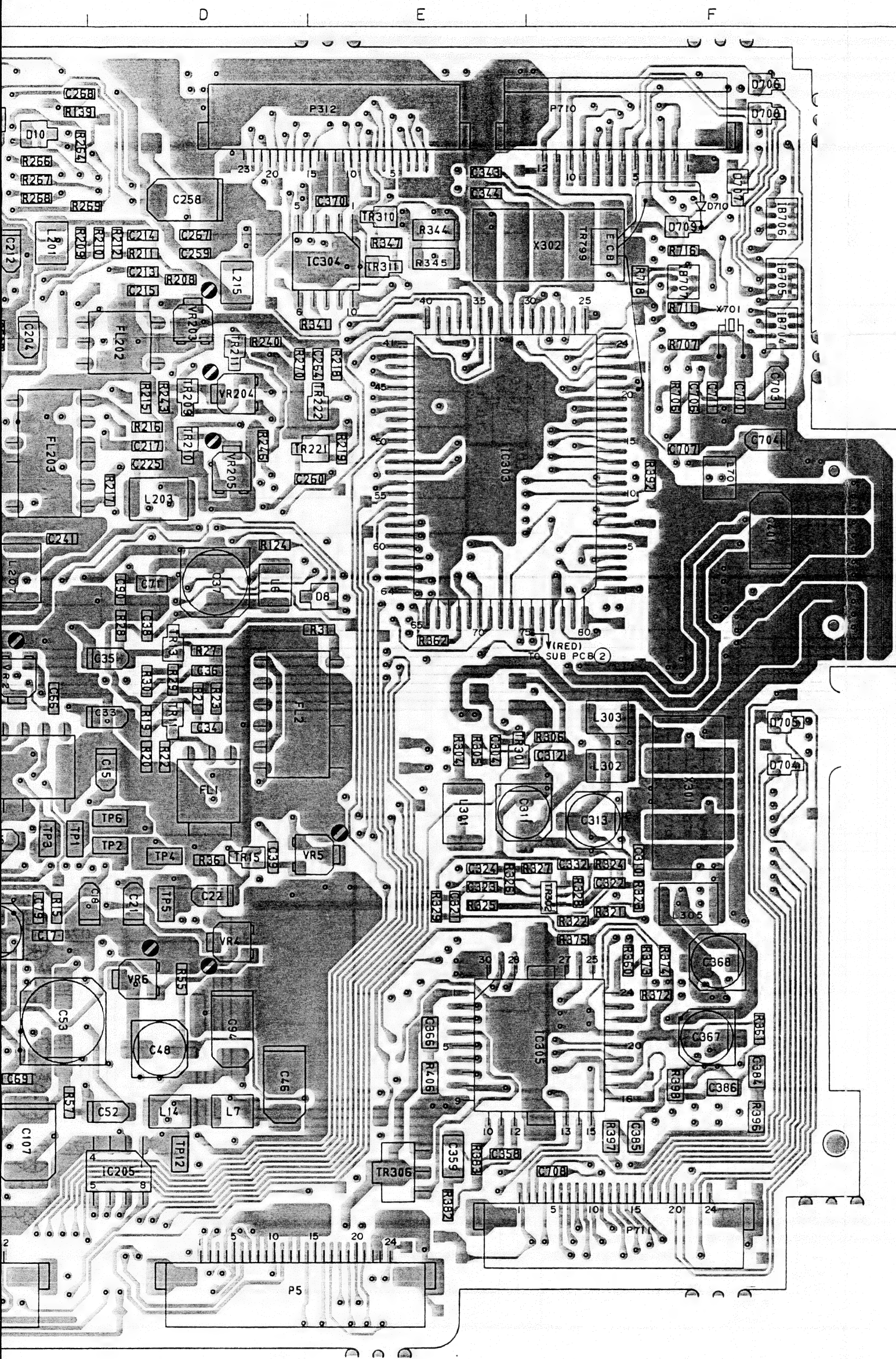




MAIN PCB V30I3A50IA (BOTTOM)

NOTE : PART  
REFE  
PART





# **PRINCIPAL PARTS LOCATION**

## **ICs**

IC8 .....	A,B4,5
IC9 .....	B5
IC204 .....	C1
IC205 .....	D6
IC303 .....	E,F2,3
IC304 .....	D,E1,2
IC305 .....	E,F5

## **DIODEs**

D7 .....	A5
D8 .....	E3
D10 .....	C1
D501 .....	B1
D704 .....	F4
D705 .....	F4
D706 .....	F1
D707 .....	F1
D708 .....	F1
D709 .....	F1

## **FILTERs**

FL1 .....	D4
FL2 .....	D,E3,4
FL3 .....	B5
FL4 .....	C4
FL202 .....	D2
FL203 .....	C2
FL501 .....	A3,4
FL502 .....	B3,4

## **INTEGRATED BLOCKs**

IB704 .....	F2
IB705 .....	F2
IB706 .....	F1
IB707 .....	F2

## **INDUCTORs**

L6 .....	D3
L7 .....	D5
L14 .....	D5
L201 .....	C1
L203 .....	D3
L206 .....	C3
L207 .....	C3
L210 .....	C3
L212 .....	B,C2
L215 .....	D2
L301 .....	E4
L302 .....	F4
L303 .....	F4
L305 .....	F4
L701 .....	F2,3

## **CONNECTORs**

P5 .....	D,E6
P13 .....	B6
P17 .....	C6
P27 .....	A6
P312 .....	D,E1
P501 .....	A,B6

## **X - TALs**

X201 .....	C2
X301 .....	F4
X302 .....	E,F1
X701 .....	F2

## **TEST POINTs**

TP1 .....	C4
TP2 .....	D4
TP3 .....	C4
TP4 .....	D4
TP5 .....	D4
TP6 .....	D4
TP8 .....	C6
TP9 .....	C5
TP10 .....	B5
TP11 .....	B,C
TP12 .....	D6

## **TRANSISTORs**

TR1 .....	B,C
TR8 .....	C3
TR10 .....	A5
TR11 .....	D4
TR13 .....	D3
TR15 .....	D4
TR23 .....	C5
TR28 .....	B5
TR29 .....	B5
TR30 .....	B5
TR31 .....	B5
TR38 .....	A5
TR39 .....	A5
TR49 .....	A4
TR209 .....	D2
TR210 .....	D2
TR211 .....	D2
TR219 .....	C1
TR221 .....	E2
TR222 .....	E2
TR223 .....	C1
TR224 .....	C1
TR225 .....	C1
TR301 .....	E4
TR302 .....	F4
TR306 .....	E6
TR310 .....	E1
TR311 .....	E1,2

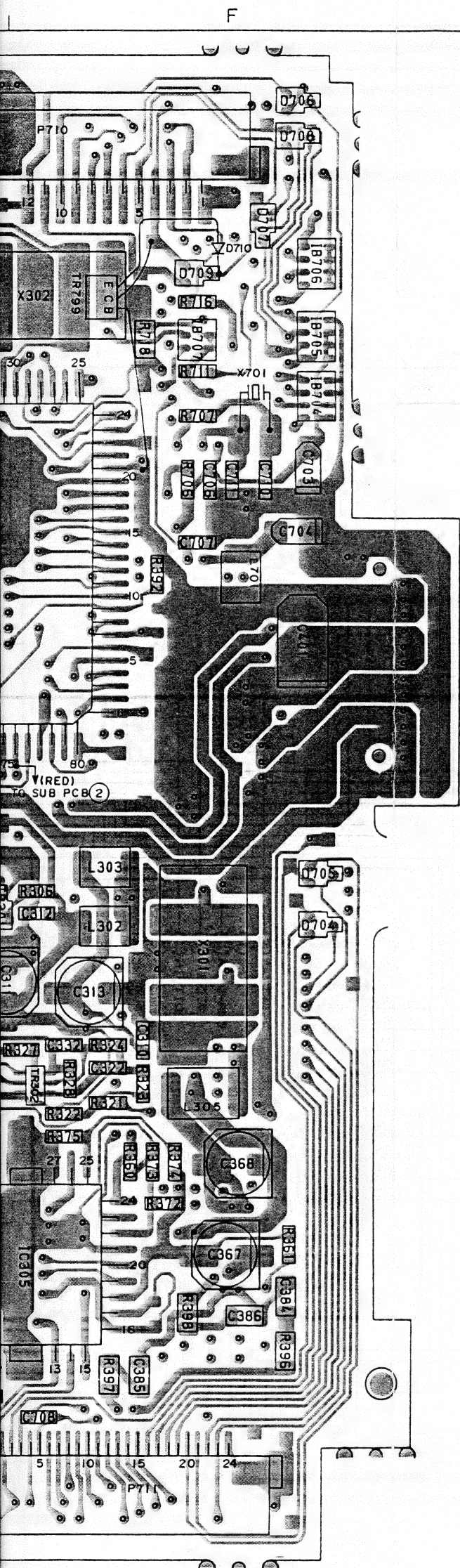
## **VARIABLE RESISTOR**

VR1 .....	C3
VR2 .....	C3
VR3 .....	C4
VR4 .....	D5
VR5 .....	D,E
VR6 .....	D5
VR7 .....	B,C
VR8 .....	B5
VR9 .....	C5
VR10 .....	C5
VR11 .....	A5
VR203 .....	D2
VR204 .....	D2
VR205 .....	D2
VR501 .....	A3
VR502 .....	A4
VR503 .....	B4
VR504 .....	B4

OI3A50IA ( BOTTOM )

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER.  
REFER TO SCHEMATIC DIAGRAMS FOR PERTAINING  
PARTS INFORMATION.





## PRINCIPAL PARTS LOCATION

### ICs

IC8	A,B4,5
IC9	B5
IC204	C1
IC205	D6
IC303	E,F2,3
IC304	D,E1,2
IC305	E,F5

### DIODEs

D7	A5
D8	E3
D10	C1
D501	B1
D704	F4
D705	F4
D706	F1
D707	F1
D708	F1
D709	F1

### FILTERs

FL1	D4
FL2	D,E3,4
FL3	B5
FL4	C4
FL202	D2
FL203	C2
FL501	A3,4
FL502	B3,4

### INTEGRATED BLOCKs

IB704	F2
IB705	F2
IB706	F1
IB707	F2

### INDUCTORs

L6	D3
L7	D5
L14	D5
L201	C1
L203	D3
L206	C3
L207	C3
L210	C3
L212	B,C2
L215	D2
L301	E4
L302	F4
L303	F4
L305	F4
L701	F2,3

### CONNECTORs

P5	D,E6
P13	B6
P17	C6
P27	A6
P312	D,E1
P501	A,B6

### X - TALs

X201	C2
X301	F4
X302	E,F1
X701	F2

P710	F1
P711	F6

### TEST POINTs

TP1	C4
TP2	D4
TP3	C4
TP4	D4
TP5	D4
TP6	D4
TP8	C6
TP9	C5
TP10	B5
TP11	B,C5
TP12	D6

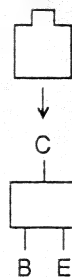
### TRANSISTORs

TR1	B,C4
TR8	C3
TR10	A5
TR11	D4
TR13	D3
TR15	D4
TR23	C5
TR28	B5
TR29	B5
TR30	B5
TR31	B5
TR38	A5
TR39	A5
TR49	A4
TR209	D2
TR210	D2
TR211	D2
TR219	C1
TR221	E2
TR222	E2
TR223	C1
TR224	C1
TR225	C1
TR301	E4
TR302	F4
TR306	E6
TR310	E1
TR311	E1,2

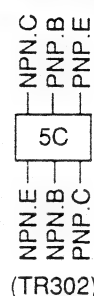
### VARIABLE RESISTORs

VR1	C3
VR2	C3
VR3	C4
VR4	D5
VR5	D,E4
VR6	D5
VR7	B,C5,6
VR8	B5,6
VR9	C5
VR10	C5
VR11	A5
VR203	D2
VR204	D2
VR205	D2
VR501	A3
VR502	A4
VR503	B4
VR504	B4

### SINGLE CHIP TRANSISTOR

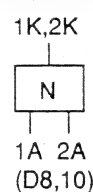


### XP4601 (PNP & NPN)



(TR302)

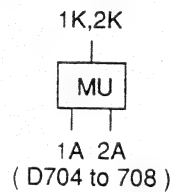
### DAN202U



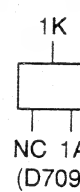
### MA717



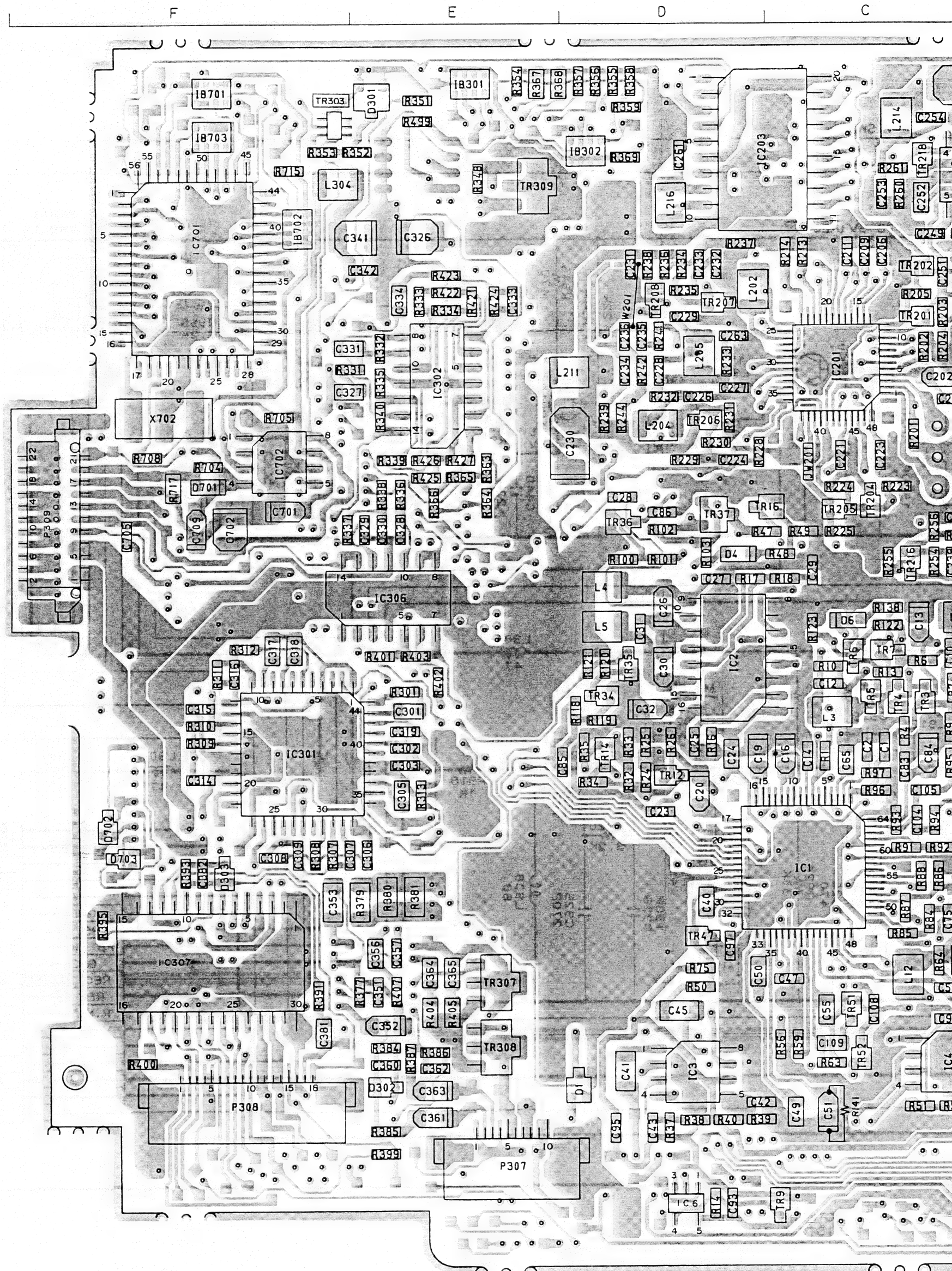
### MA132WK



### MA132HK

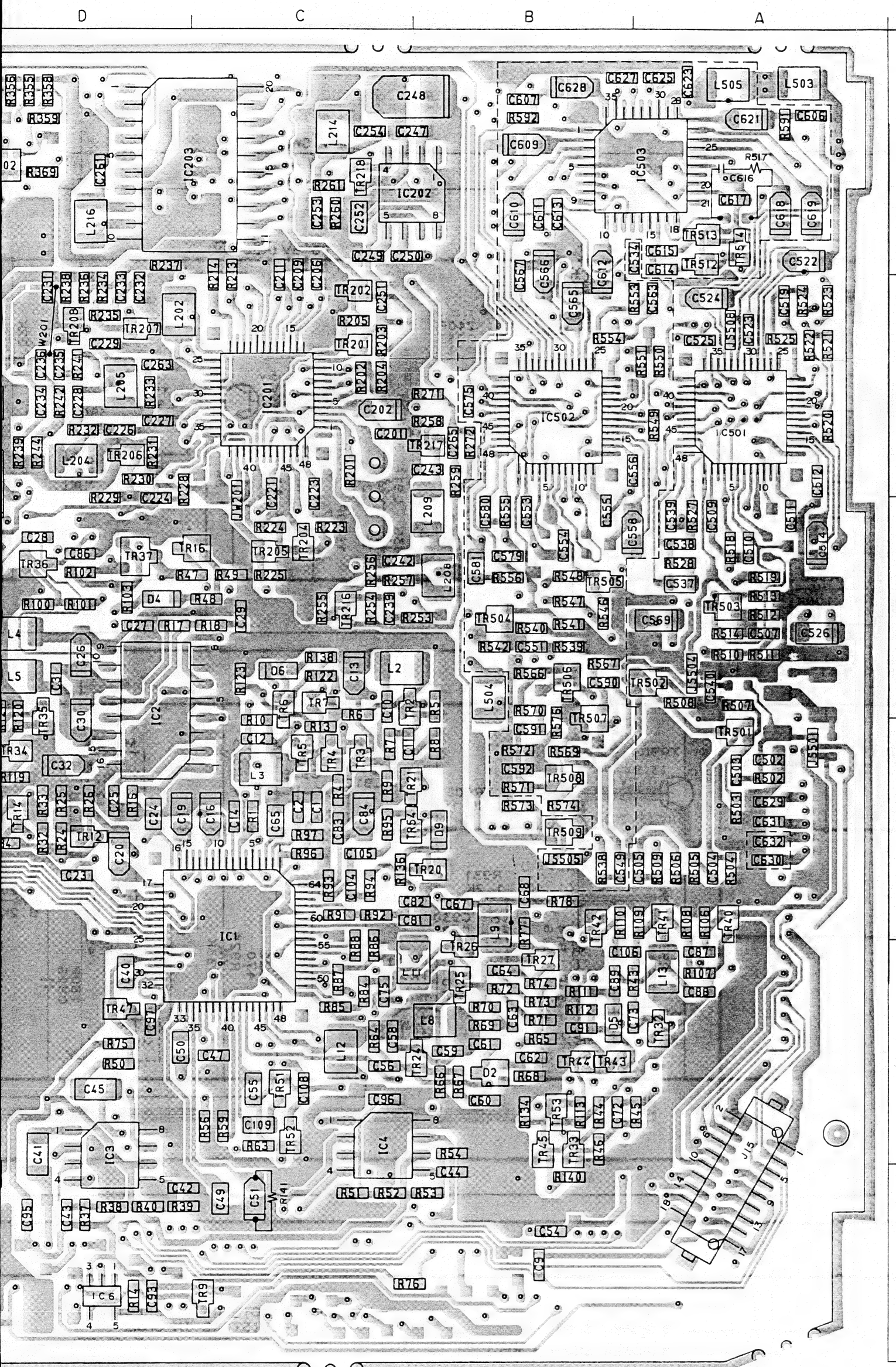






MAIN PCB V30I3A50IA (TOP)





# PRINCIPAL PARTS LOCATION

ICs	INDUCTORS
IC1 ..... C,D4,5	L2 .....
IC2 ..... D3,4	L3 .....
IC3 ..... D5,6	L4 .....
IC4 ..... C5	L5 .....
IC6 ..... D6	L8 .....
IC201 ..... C2	L9 .....
IC202 ..... B,C1	L11 .....
IC203 ..... C,D1	L12 .....
IC301 ..... F4	L13 .....
IC302 ..... E2	L202 .....
IC306 ..... E,F3	L204 .....
IC307 ..... F5	L205 .....
IC501 ..... A2	L208 .....
IC502 ..... B2	L209 .....
IC503 ..... A,B1	L211 .....
IC701 ..... F1,2	L214 .....
IC702 ..... F2,3	L216 .....

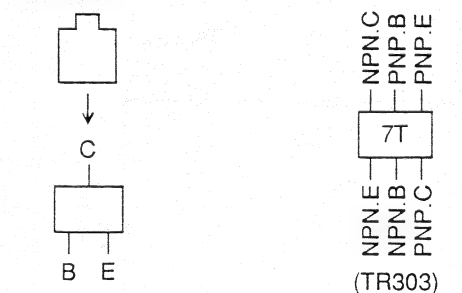
DIODES	INDUCTORS
D1 ..... D6	L501 .....
D2 ..... B5	L502 .....
D4 ..... D3	L503 .....
D5 ..... B5	L504 .....
D6 ..... C3	L505 .....

TRANSISTORS
TR2 .....
TR3 .....
TR4 .....
TR5 .....
TR6 .....
TR7 .....
TR9 .....

INTEGRATED BLOCKS
IB301 ..... E1
IB302 ..... D1
IB701 ..... F1
IB702 ..... F1
IB703 ..... F1

CONNECTORS
J15 ..... A5,6
P307 ..... E6
P308 ..... F6
P309 ..... F3

XP4312  
NPN WITH RESISTOR  
&  
PNP WITH RESISTOR

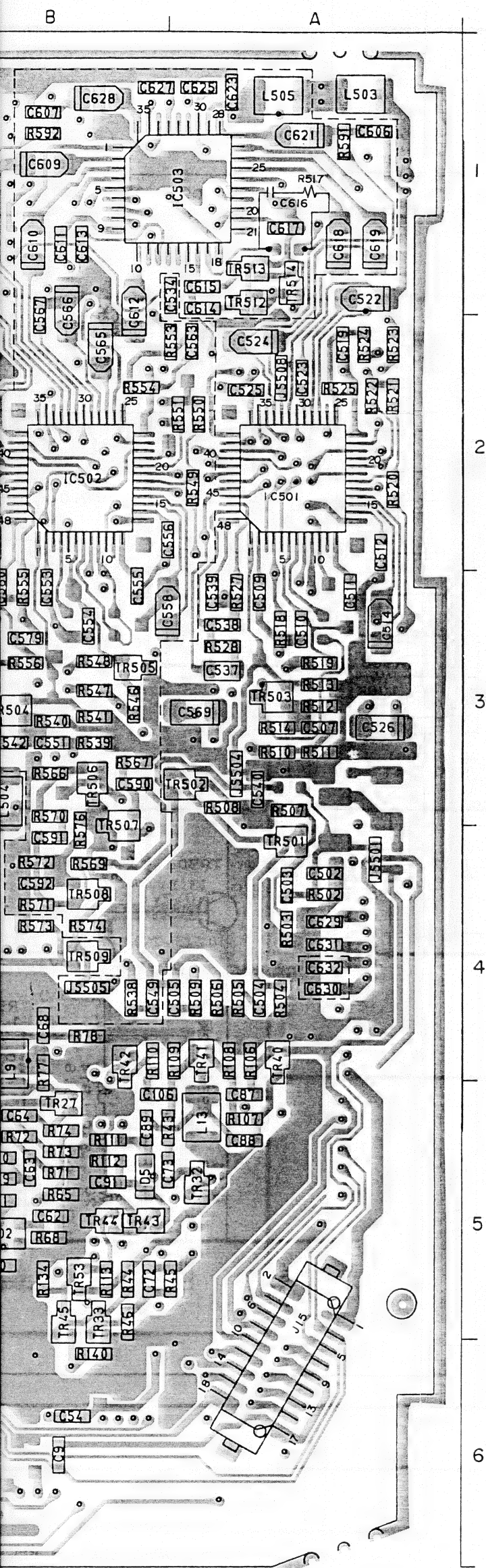


MA147 1K,2A MS 1A 2K (D2)	DAN202U K N 1A 2A (D1)	MA133 1K,2A MU 1A 2K (D702)
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PCB V30I3A50IA (TOP)

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER.  
REFER TO SCHEMATIC DIAGRAMS FOR PERTAINING  
PARTS INFORMATION.





# PRINCIPAL PARTS LOCATION

## ICs

IC1	.....	C,D4,5
IC2	.....	D3,4
IC3	.....	D5,6
IC4	.....	C5
IC6	.....	D6
IC201	.....	C2
IC202	.....	B,C1
IC203	.....	C,D1
IC301	.....	F4
IC302	.....	E2
IC306	.....	E,F3
IC307	.....	F5
IC501	.....	A2
IC502	.....	B2
IC503	.....	A,B1
IC701	.....	F1,2
IC702	.....	F2,3

## DIODEs

D1	.....	D6
D2	.....	B5
D4	.....	D3
D5	.....	B5
D6	.....	C3
D9	.....	B4
D301	.....	E1
D302	.....	E6
D303	.....	F4,5
D701	.....	F3
D702	.....	F4
D703	.....	F4

## INTEGRATED BLOCKs

IB301	.....	E1
IB302	.....	D1
IB701	.....	F1
IB702	.....	F1
IB703	.....	F1

## CONNECTORs

J15	.....	A5,6
P307	.....	E6
P308	.....	F6
P309	.....	F3

## INDUCTORs

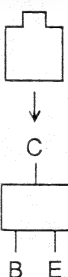
L2	.....	C3
L3	.....	C4
L4	.....	D3
L5	.....	D4
L8	.....	B5
L9	.....	B4
L11	.....	B,C5
L12	.....	C5
L13	.....	A5
L202	.....	D2
L204	.....	D2
L205	.....	D2
L208	.....	B3
L209	.....	B3
L211	.....	D2
L214	.....	C1
L216	.....	D1
L304	.....	F1
L501	.....	A3
L502	.....	A3,4
L503	.....	A1
L504	.....	B3
L505	.....	A1

## TRANSISTORs

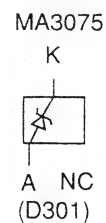
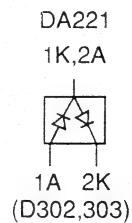
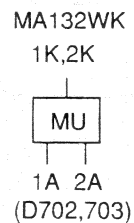
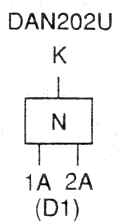
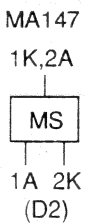
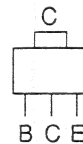
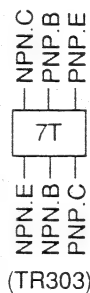
TR2	.....	C3
TR3	.....	C4
TR4	.....	C4
TR5	.....	C4
TR6	.....	C3
TR7	.....	C3
TR9	.....	C6
TR12	.....	D4
TR14	.....	D4
TR16	.....	C,D3
TR20	.....	B4
TR21	.....	C4
TR24	.....	B,C5
TR25	.....	B5
TR26	.....	B5
TR27	.....	B5
TR32	.....	A5
TR33	.....	B5
TR34	.....	D4

TR35	.....	D3,4
TR36	.....	D3
TR37	.....	D3
TR40	.....	A4
TR41	.....	A4
TR42	.....	B4
TR43	.....	B5
TR44	.....	B5
TR45	.....	B5
TR47	.....	D5
TR51	.....	C5
TR52	.....	C5
TR53	.....	B5
TR54	.....	B,C4
TR201	.....	C2
TR202	.....	C2
TR204	.....	C3
TR205	.....	C3
TR206	.....	D2
TR207	.....	D2
TR208	.....	D2
TR216	.....	C3
TR217	.....	B,C2
TR218	.....	C1
TR303	.....	F1
TR307	.....	E5
TR308	.....	E5
TR309	.....	E1
TR501	.....	A4
TR502	.....	A3
TR503	.....	A3
TR504	.....	B3
TR505	.....	B3
TR506	.....	B3
TR507	.....	B3,4
TR508	.....	B4
TR509	.....	B4
TR512	.....	A1
TR513	.....	A1
TR514	.....	A1

SINGLE CHIP  
TRANSISTOR

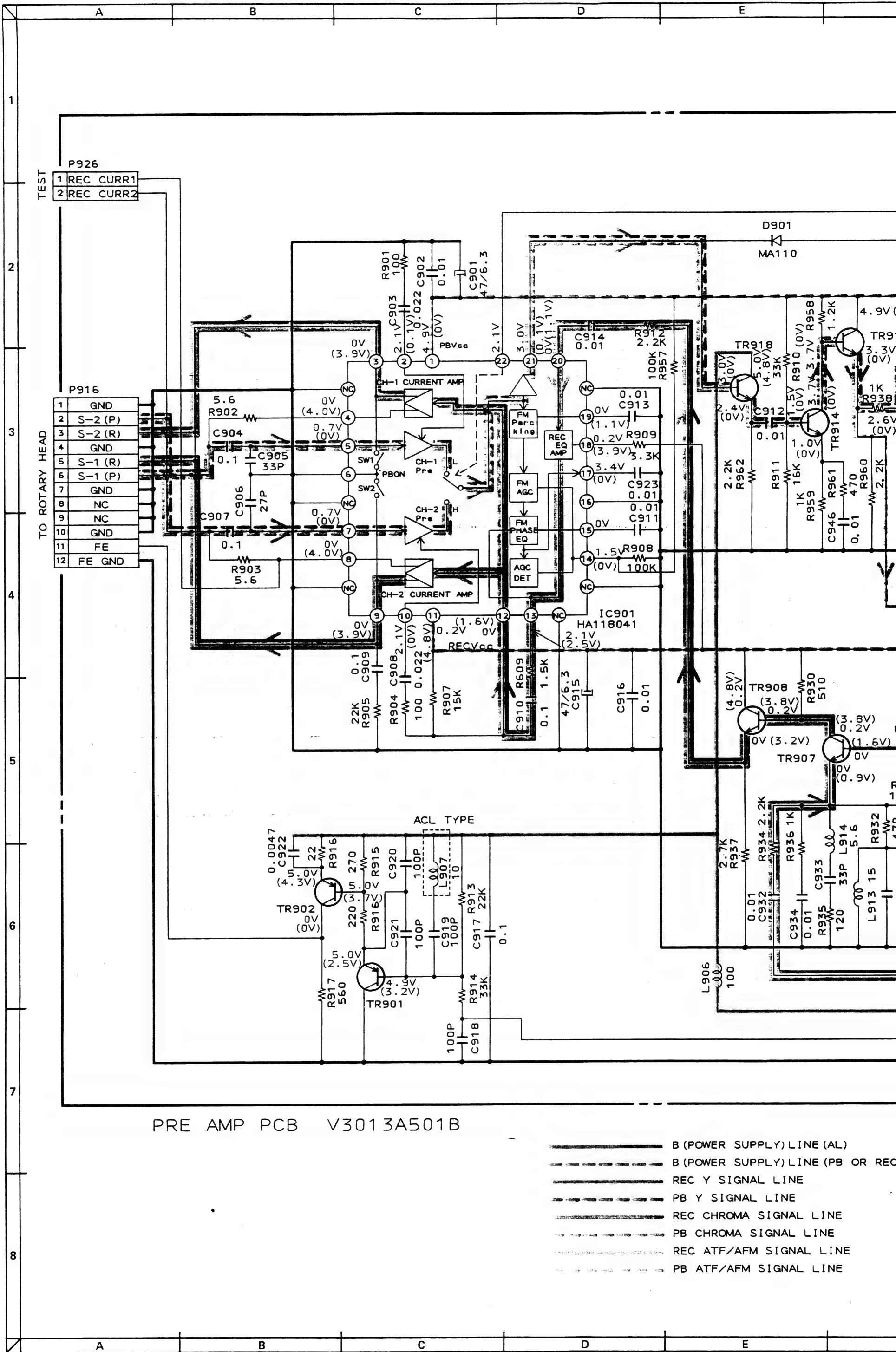


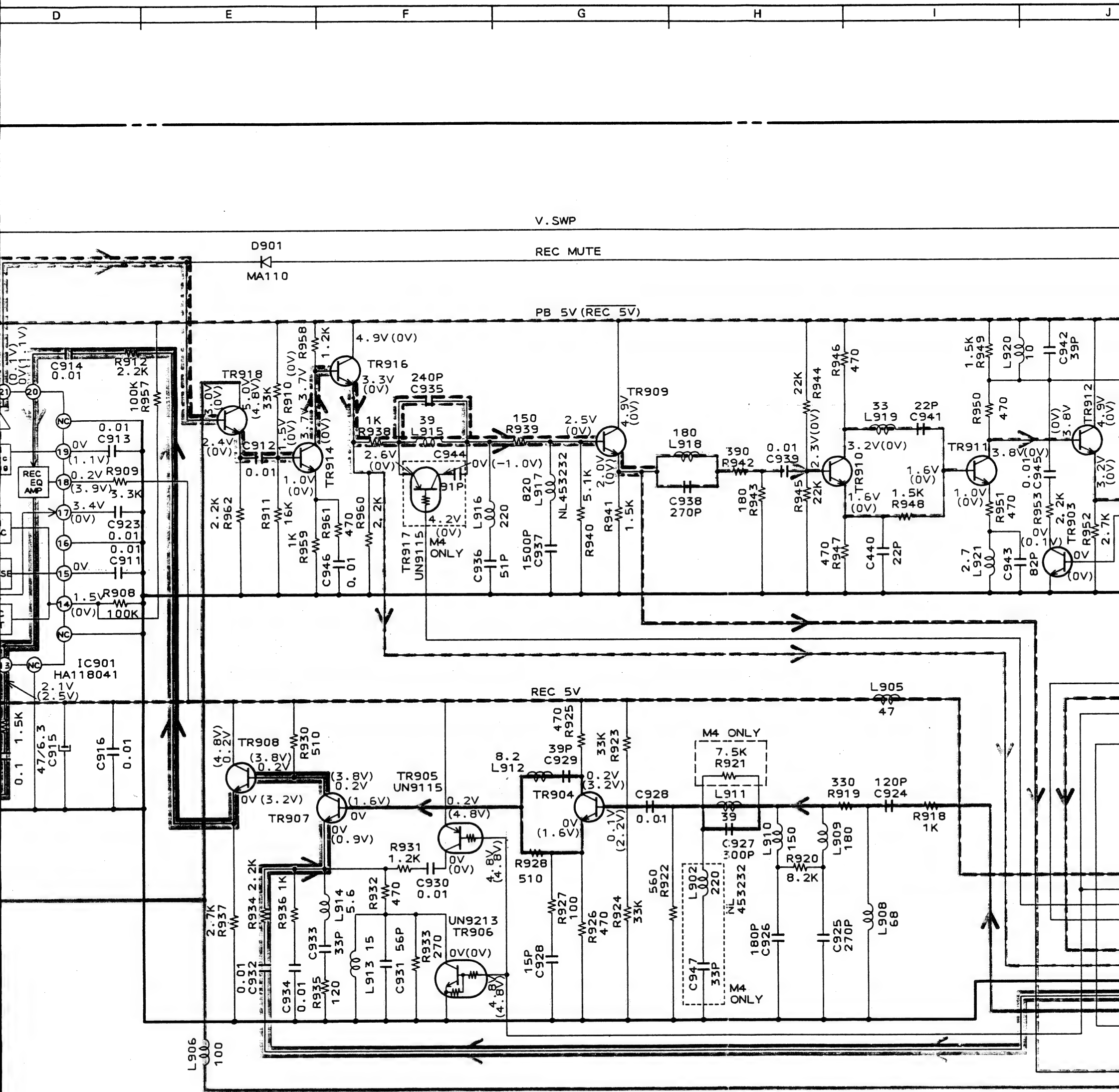
XP4312  
(NPN WITH RESISTORS  
&  
PNP WITH RESISTORS)



DIFFER DEPENDING ON MODEL NUMBER.  
TO SCHEMATIC DIAGRAMS FOR PERTAINING  
INFORMATION.



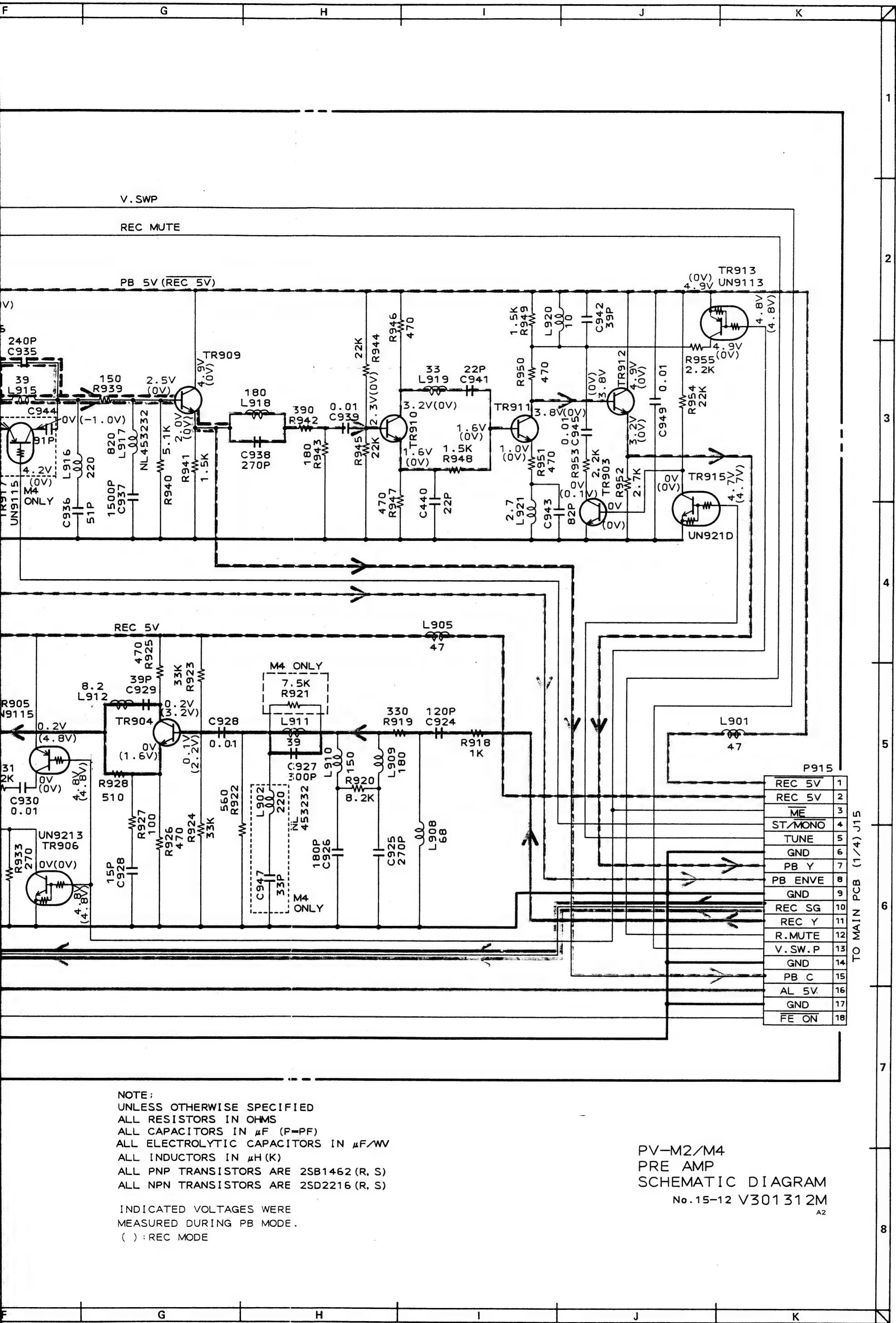




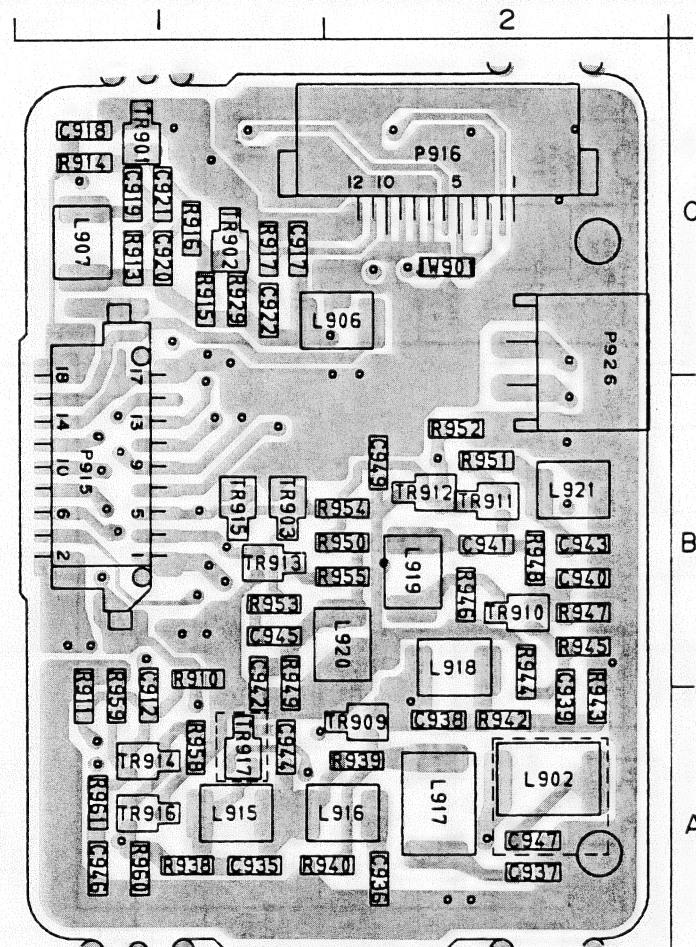
— B (POWER SUPPLY) LINE (AL)  
 - - - B (POWER SUPPLY) LINE (PB OR REC)  
 — REC Y SIGNAL LINE  
 - - - PB Y SIGNAL LINE  
 — REC CHROMA SIGNAL LINE  
 - - - PB CHROMA SIGNAL LINE  
 — REC ATF/AFM SIGNAL LINE  
 - - - PB ATF/AFM SIGNAL LINE

NOTE:  
 UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS  
 ALL CAPACITORS IN  $\mu F$  (P=PF)  
 ALL ELECTROLYTIC CAPACITORS IN  $\mu F/W$   
 ALL INDUCTORS IN  $\mu H$  (K)  
 ALL PNP TRANSISTORS ARE 2SB1462 (R, S)  
 ALL NPN TRANSISTORS ARE 2SD2216 (R, S)

INDICATED VOLTAGES WERE  
 MEASURED DURING PB MODE.  
 ( ) : REC MODE







PRE AMP PCB V30I3A50IB(BOTTOM)

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER.  
REFER TO SCHEMATIC DIAGRAMS FOR PERTAINING  
PARTS INFORMATION.

# PRINCIPAL PARTS LOCATION

## IC

IC901 ..... C1

## DIODE

D901 ..... B1

## CONNECTORS

P915 ..... B1  
P916 ..... C2  
P926 ..... B,C2

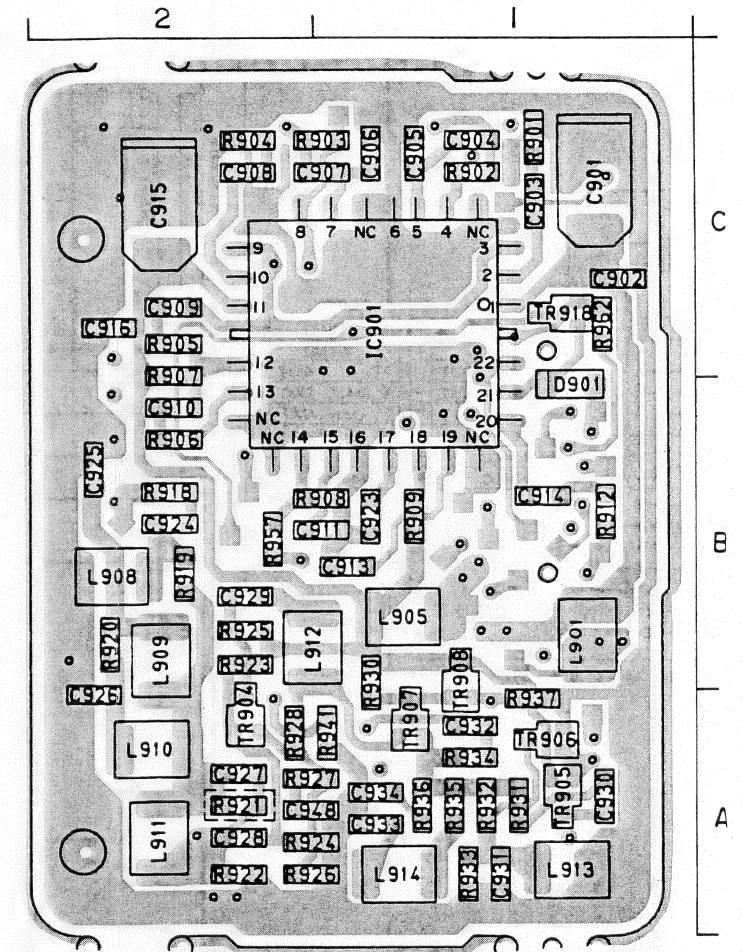
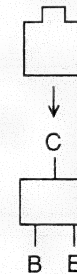
## INDUCTORS

L901 ..... B1  
L902 ..... A2  
L905 ..... B1  
L906 ..... C2  
L907 ..... C1  
L908 ..... B2  
L909 ..... B2  
L910 ..... A2  
L911 ..... A2  
L912 ..... B1,2  
L913 ..... A1  
L914 ..... A1  
L915 ..... A1  
L916 ..... A2  
L917 ..... A2  
L918 ..... B2  
L919 ..... B2  
L920 ..... B2  
L921 ..... B2

## TRANSISTORS

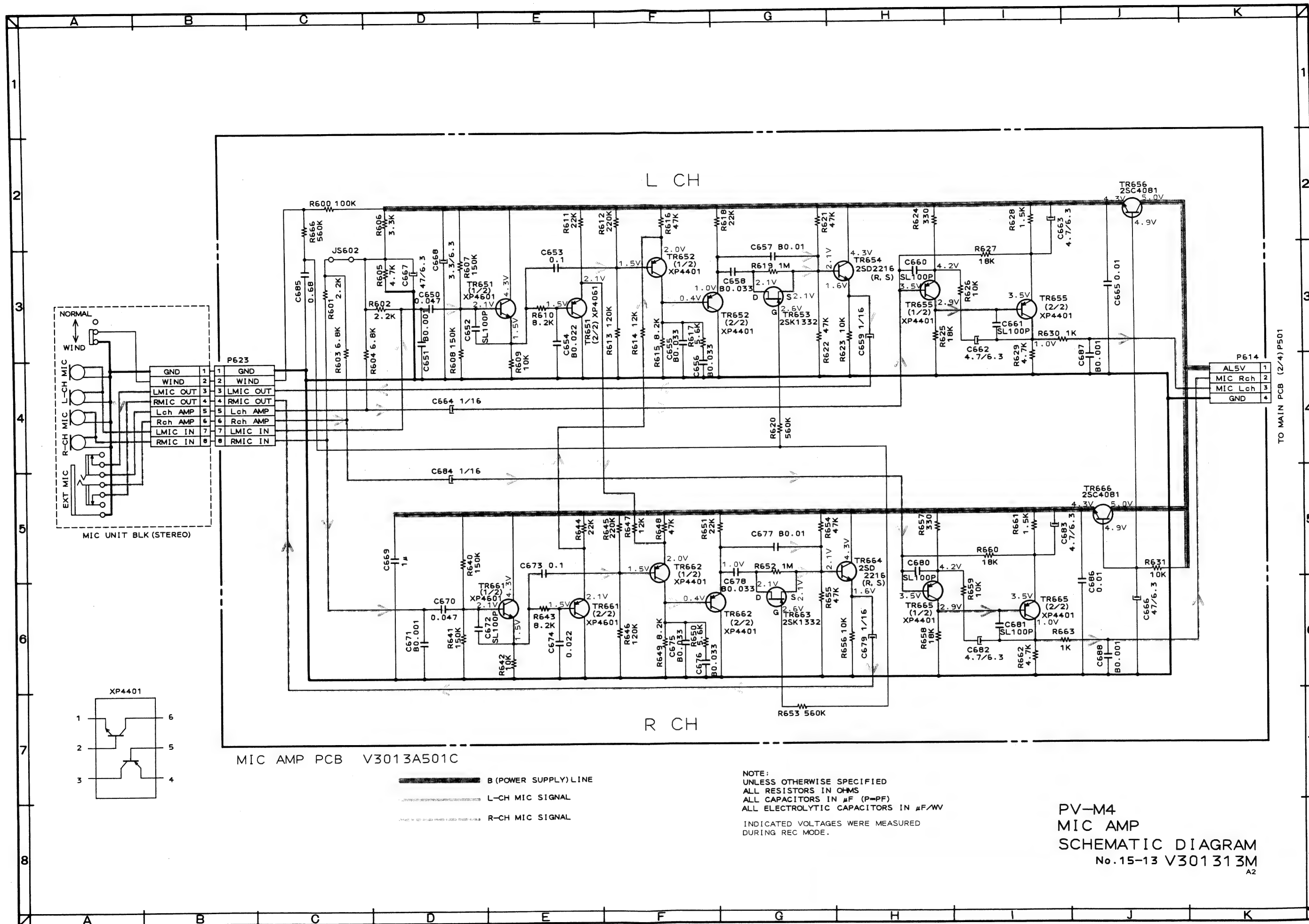
TR901 ..... C1  
TR902 ..... C1  
TR903 ..... B1  
TR904 ..... A2  
TR905 ..... A1  
TR906 ..... A1  
TR907 ..... A1  
TR908 ..... A,B1  
TR909 ..... A2  
TR910 ..... B2  
TR911 ..... B2  
TR912 ..... B2  
TR913 ..... B1  
TR914 ..... A1  
TR915 ..... B1  
TR916 ..... A1  
TR917 ..... A1  
TR918 ..... C1

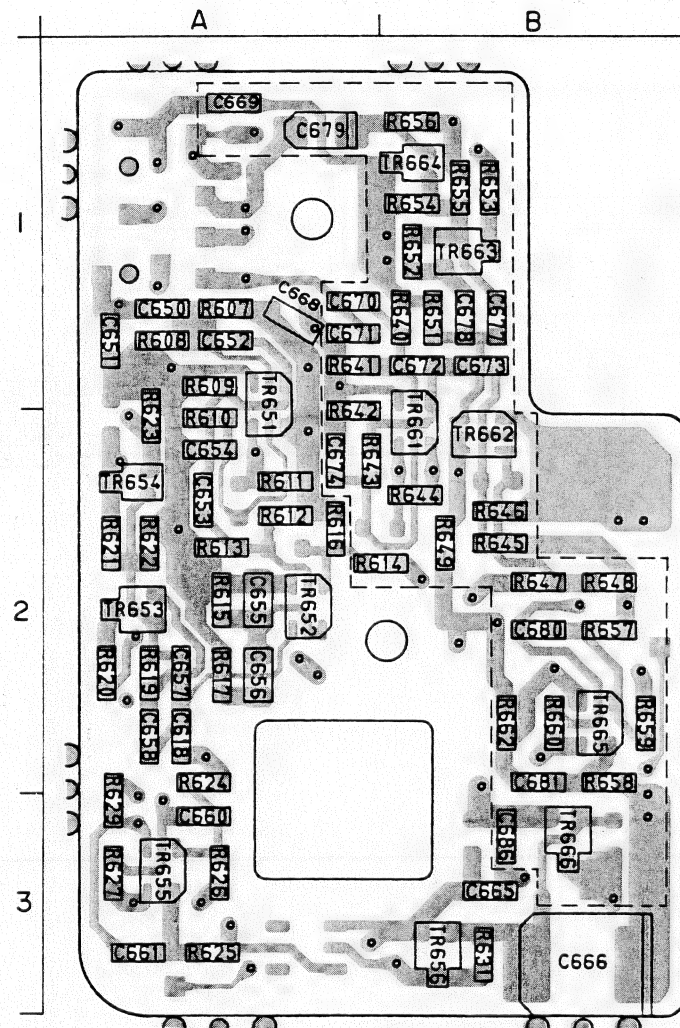
SINGLE CHIP  
TRANSISTOR



PRE AMP PCB V30I3A50IB(TOP)







MIC AMP PCB V30I3A50IC (BOTTOM)

### PRINCIPAL PARTS LOCATION

#### TRANSISTORS

TR651	.....	A1,2
TR652	.....	A2
TR653	.....	A2
TR654	.....	A2
TR655	.....	A3
TR656	.....	B3
TR661	.....	B1,2
TR662	.....	B2
TR663	.....	B1
TR664	.....	B1
TR665	.....	B3
TR666	.....	B3

SINGLE CHIP  
TRANSISTOR



G



S D

(TR653,TR663)

SINGLE CHIP  
TRANSISTOR



C



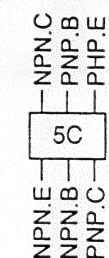
B E

### PRINCIPAL PARTS LOCATION

#### CONNECTORS

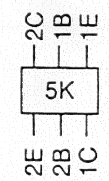
P614	.....	B3
P623	.....	A1

XP4601  
(PNP & NPN)



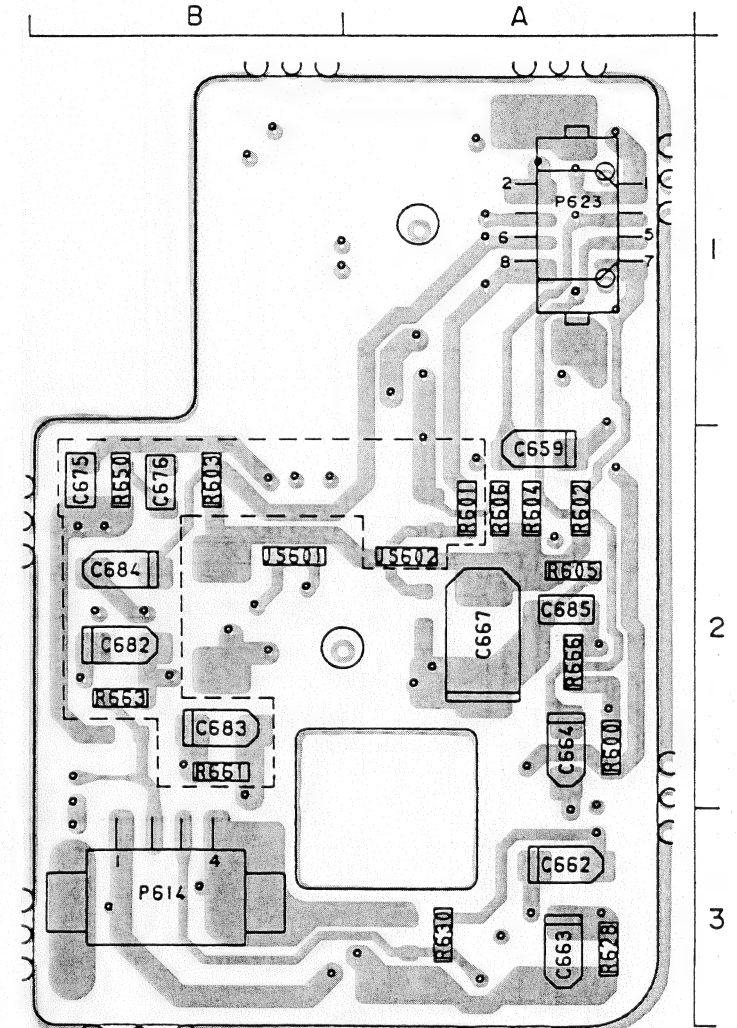
( TR651  
TR661 )

XP4401  
(PNP x 2)

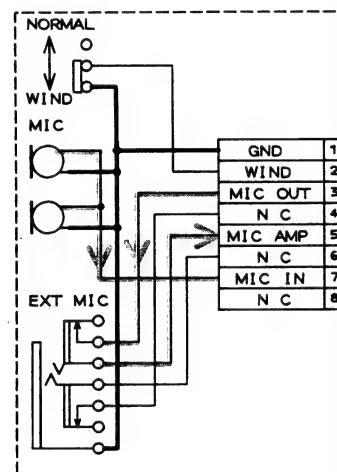


( TR652,TR655  
TR662,TR665 )

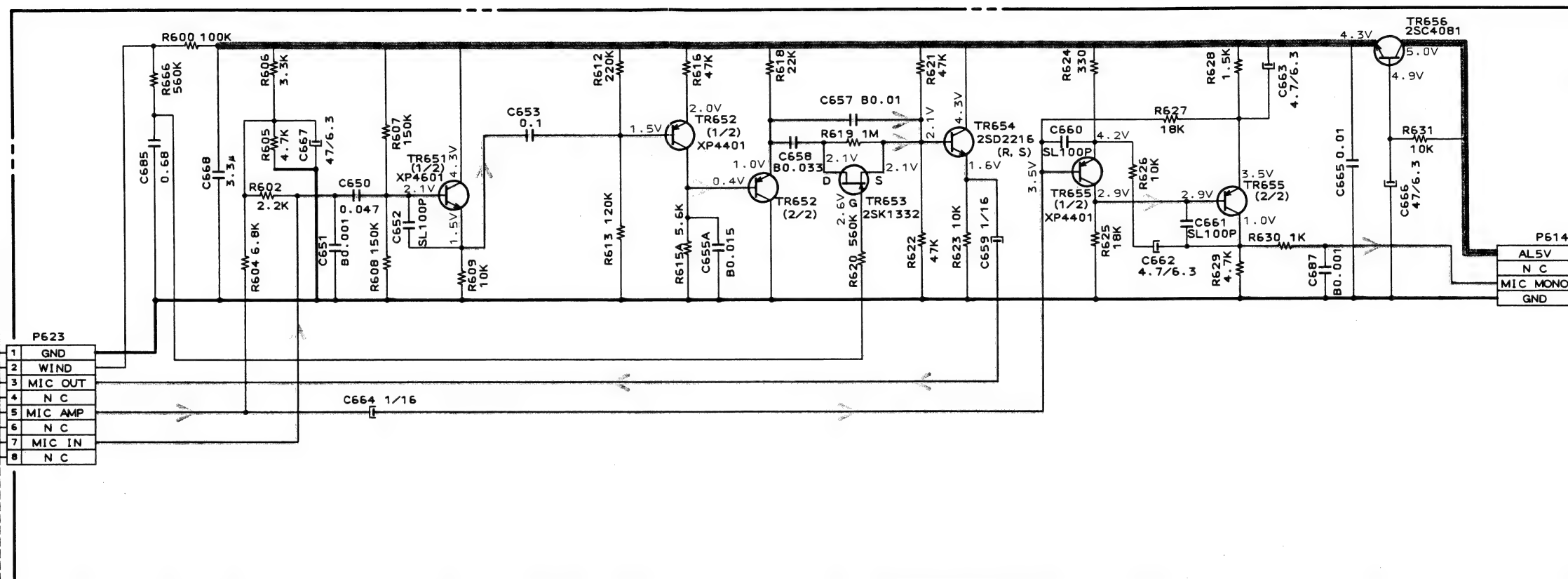
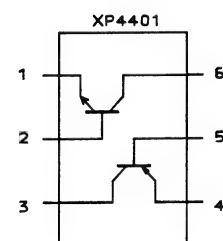
NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER.  
REFER TO SCHEMATIC DIAGRAMS FOR PERTAINING  
PARTS INFORMATION.



MIC AMP PCB V30I3A50IC(TOP)



MIC UNIT BLK (MONO)



MIC AMP PCB V3013A501C

NOTE:  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS  
ALL CAPACITORS IN  $\mu$ F (P=PF)  
ALL ELECTROLYTIC CAPACITORS IN  $\mu$ F/WV

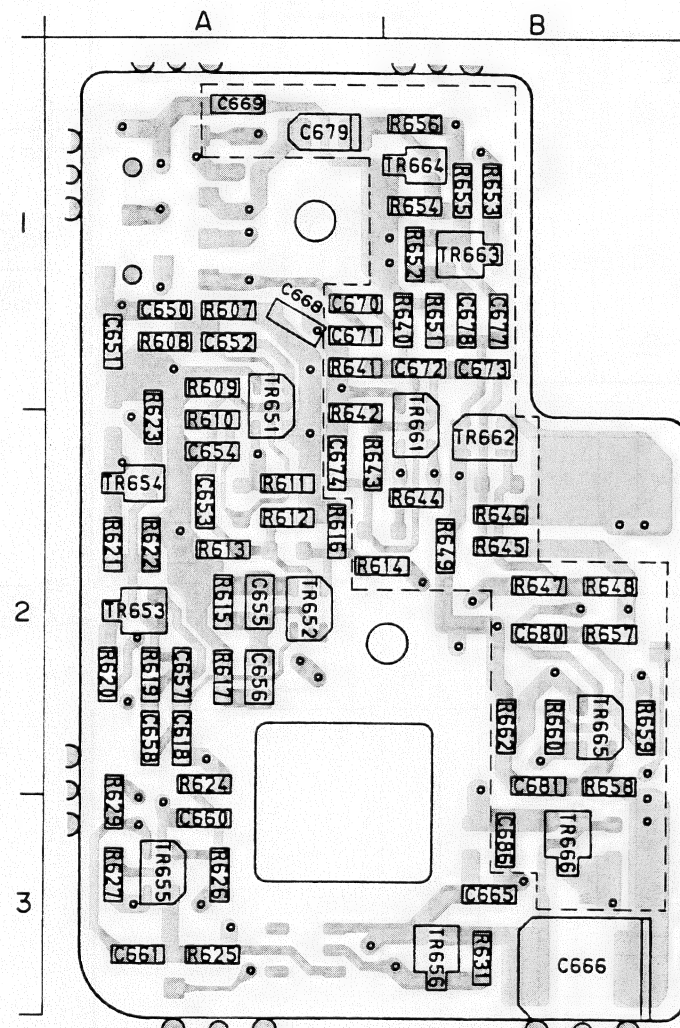
INDICATED VOLTAGES WERE MEASURED  
DURING REC. MODE.

— B (POWER SUPPLY) LINE  
— MIC SIGNAL LINE

PV-M2  
MIC AMP (MONO)  
SCHEMATIC DIAGRAM  
No. 15-14 V301314M

A2



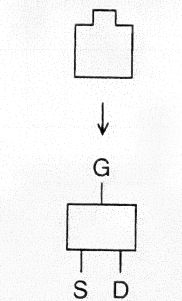


MIC AMP PCB V30I3A50IC (BOTTOM)

### PRINCIPAL PARTS LOCATION

## TRANSISTORS

TR651	.....	A1,2
TR652	.....	A2
TR653	.....	A2
TR654	.....	A2
TR655	.....	A3
TR656	.....	B3
TR661	.....	B1,2
TR662	.....	B2
TR663	.....	B1
TR664	.....	B1
TR665	.....	B3
TR666	.....	B3

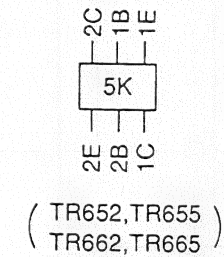
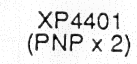
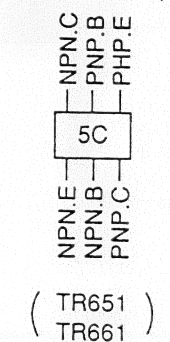
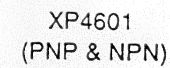
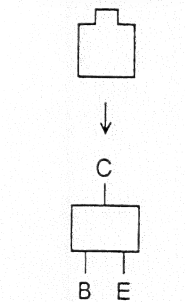


(TR653,TR663)

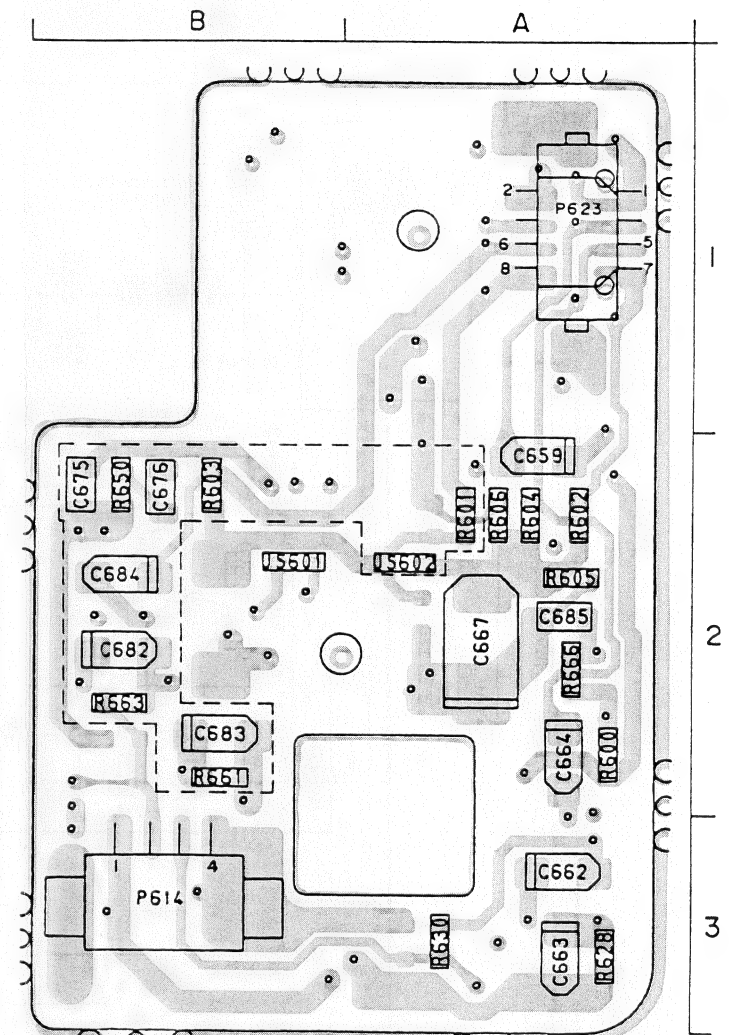
### PRINCIPAL PARTS LOCATION

## CONNECTORs

P614..... B3  
P623..... A1

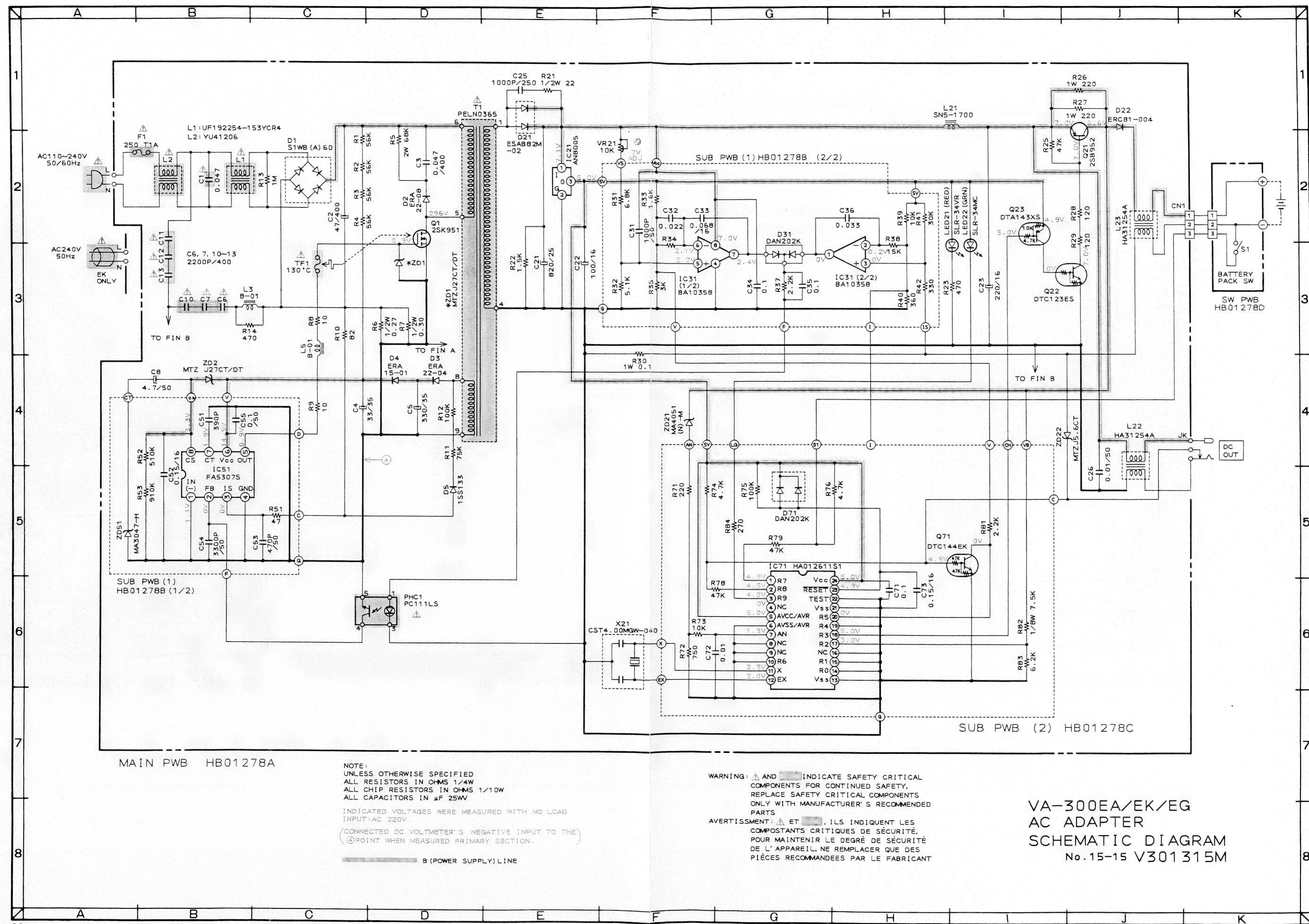


NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER.  
REFER TO SCHEMATIC DIAGRAMS FOR PERTAINING  
PARTS INFORMATION.

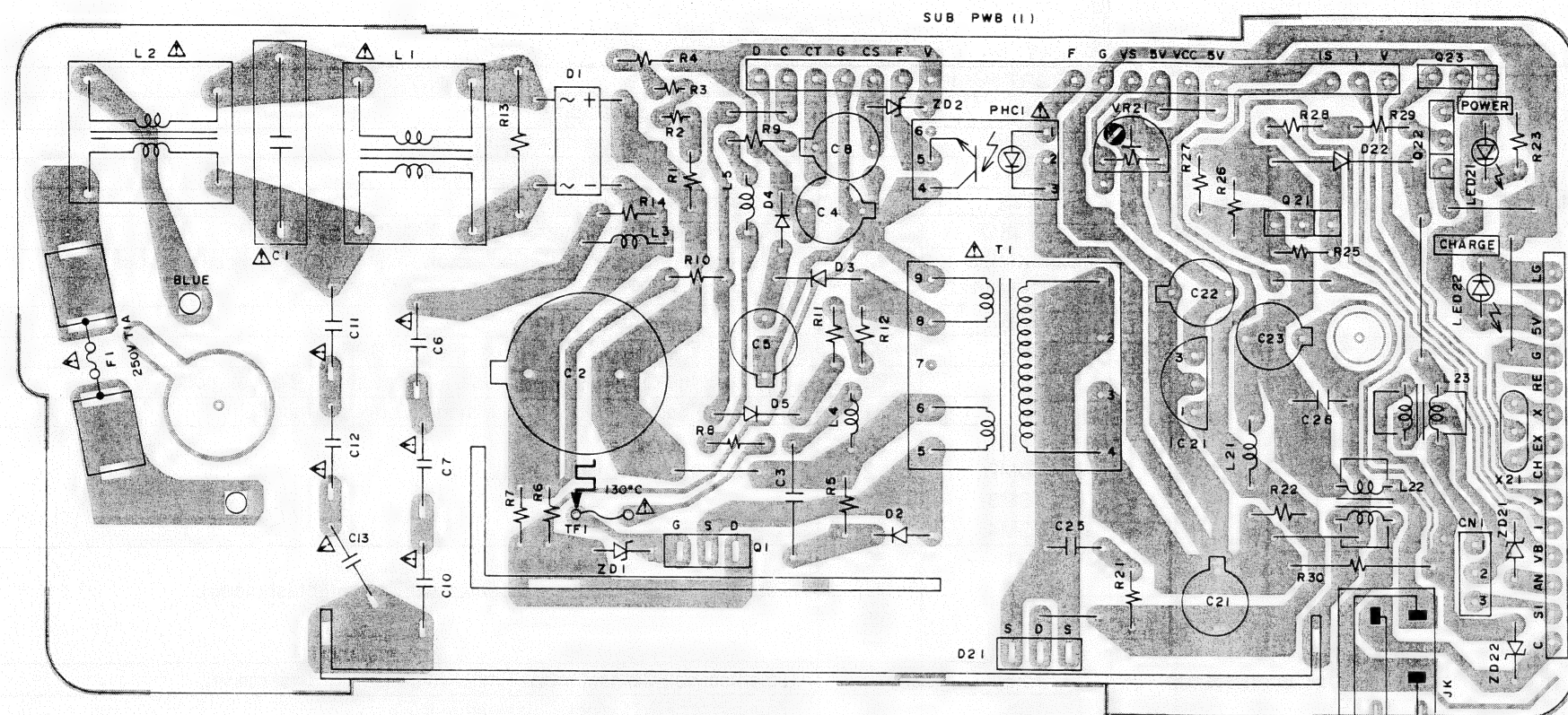


MIC AMP PCB V30I3A50IC(TOP)



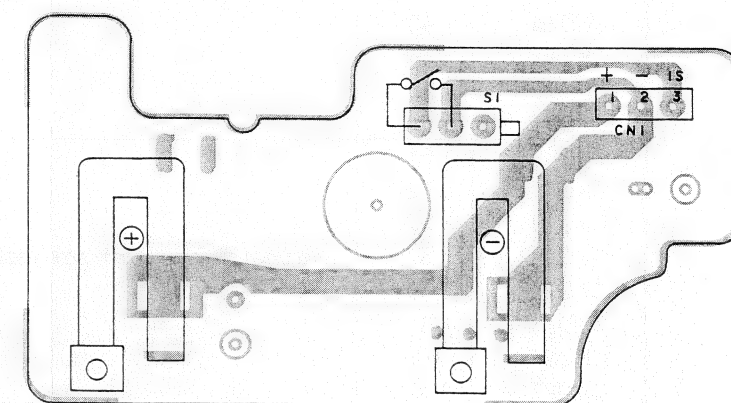




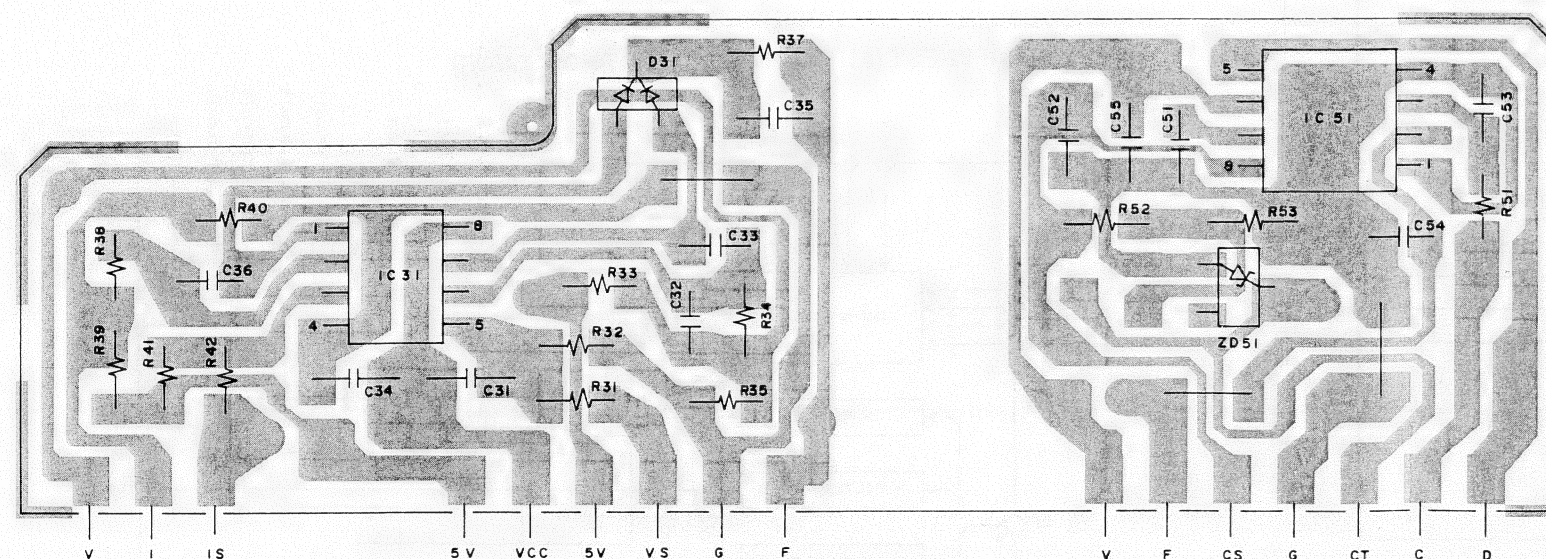


MAIN PWB HB01278A

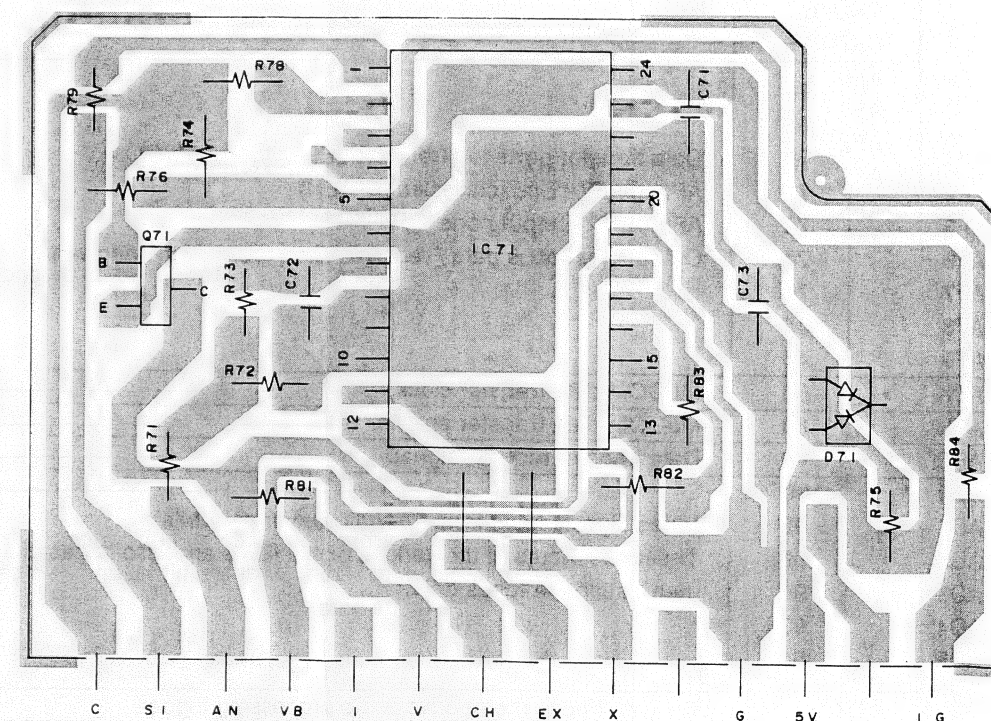
WARNING:  $\Delta$  INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.  
 AVERTISSEMENT:  $\Delta$  IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.



SW PWB HB01278D



SUB PWB (1) HB01278B



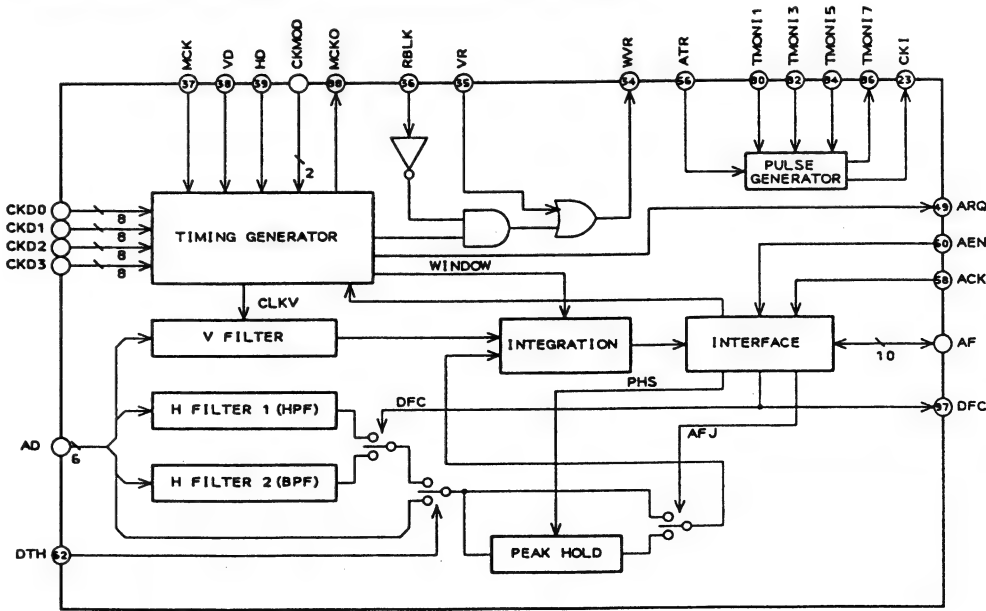
SUB PWB (2) HB01278C

DAF02-FSY (AUTO CHASE FOCUS PROCESSOR)

PORT NAME	PIN No.	FUNCTION
CKD10	30	Vertical effective position assignment value. (Initial value is E1 by internal pull up resistors)
CKD11	33	
CKD12	41	
CKD13	42	
CKD14	43	
CKD15	46	
CKD16	48	
CKD17	50	
CKD20	51	Vertical divided block size assignment value. (Initial value is F0 by pull up resistors)
CKD21	52	
CKD22	55	
CKD23	57	
CKD24	59	
CKD25	61	
CKD26	63	
CKD27	67	
CKD30	5	Horizontal effective position assignment value. (Initial value is FF by internal pull up resistors)
CKD31	6	
CKD32	7	
CKD33	8	
CKD34	9	
CKD35	10	
CKD36	11	
CKD37	12	
CKD40	13	Horizontal divided block size assignment value. (Initial value is FF by pull up resistors)
CKD41	14	
CKD42	16	
CKD43	17	
CKD44	18	
CKD45	19	
CKD46	20	
CKD47	21	
AF0	64	Data transfer ports to / from CAMERA control MI-COM. AF0 to AF7 : Bus (controlled by AEN) AF8, AF9 : Output ports Outputs the focus data / recieves filter, focus mode and window data.
AF1	66	
AF2	68	
AF3	70	
AF4	72	
AF5	73	
AF6	74	
AF7	75	
AF8	44	
AF9	45	
ACK	58	MI-COM data transfer clock.
AEN	60	MI-COM data transfer enable.
ARQ	49	Data transfer request signal.
AD0	100	Video signal inputs from the A/D convertor (6 bits). These are inputs of the various digital filters and also bases of the focus data when generating the focus data.
AD1	99	
AD2	98	
AD3	96	
AD4	93	
AD5	91	
ATR	56	Focus motor drive pulse processing trigger.
CK1	23	Focus motor drive pulse output.
VD	38	V-sync input.
HD	39	H-sync input.

PORT NAME	PIN No.	FUNCTION
VR	35	IMS character data input.
RBLK	36	IMS character's edge data input.
WVR	34	IMS character (with frame) data output
MCK	37	Master clock.
MCKO	88	A/D convertor clock (controlled with CKMOD0,1 and MCK)
CKMDO	92	Selection of the clock's division factor. (Initial value is 4 by internal pull up.) 0: MCK, 1: 1/2 MCK, 3: 1/3 MCK, 4: 1/4 MCK.
CKMD1	95	
SRST	47	System reset input.
DFC	97	To select the filter mode BPF or HPF. (H: BPF)
DTH	62	To select the digital through mode. H: through (filter pass) mode.
TJ	31	To select the test mode (H: test mode, L: normal mode).
TSM1	1	Test pins (Test monitor select).
TSM2	2	
TSM3	24	
TSM4	25	
TC1	69	Test pins (to select internal counter when counter test mode).
TC2	71	
TC3	76	
TC4	77	
TCS	89	To select counter test mode (Initial value is H: normal mode).
TCK	94	Test pin for TEST clock (Initial value is L).
TMONI1	80	CK1 mode select.
TMONI3	82	0: 390 pps, 1: 240 pps, 2:120 pps, 3: 60 pps.
TMONI5	84	To select the sequential sending mode (L: sequential mode, initial value is H)
TMONI7	86	ATR output to the motor driver when sequential mode.
TMONI2	81	Test pins (test monitor output).
TMONI4	83	
TMONI6	85	
TMONI8	87	
TIN3	22	Test pins (test data inputs, initial value is 0).
TIN4	26	
TIN5	27	
TIN6	32	

DAF02-FSY (AUTO CHASE FOCUS PROCESSOR)

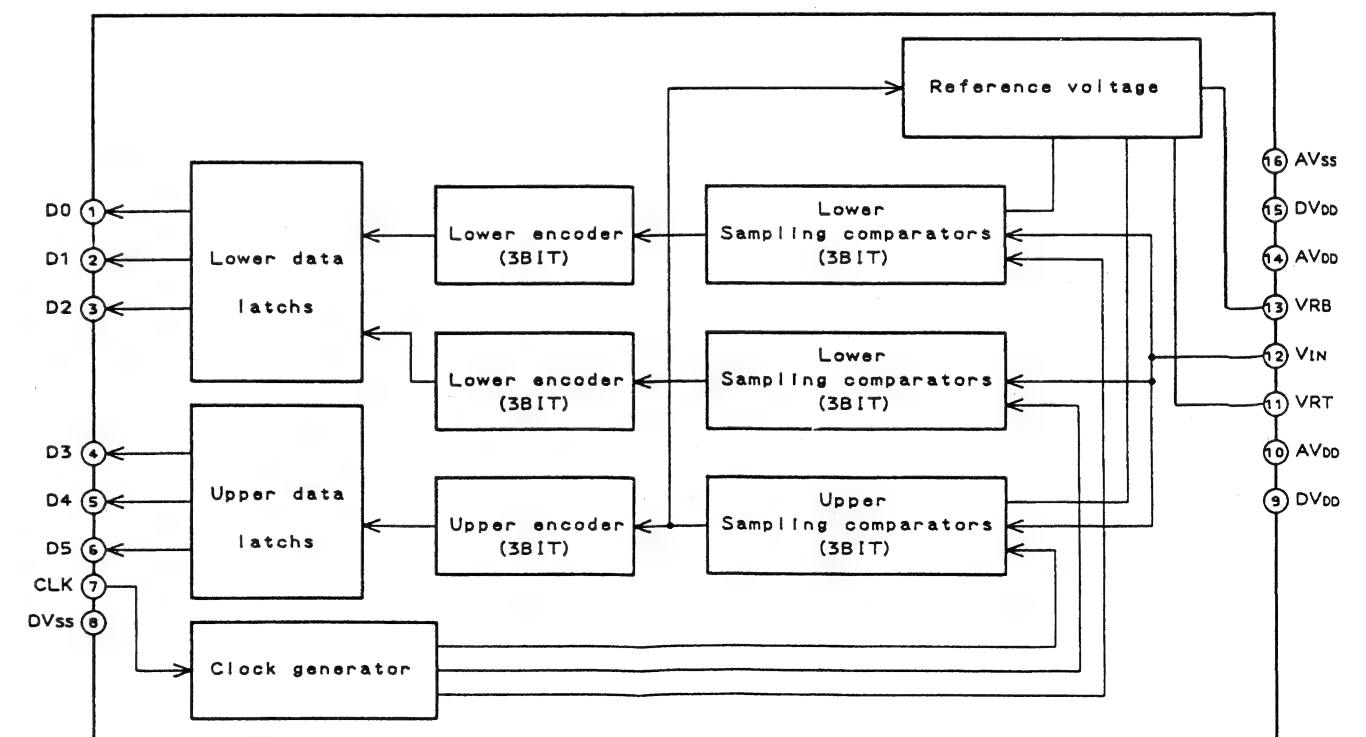




**M37451M8-224FP (CAMERA CONTROL MI-COM)**

PORT NAME	PIN No.	FUNCTION
N.C	1	No connection.
WB -Y	2	White level detect input.
ARQ	3	Data transfer control signal input.
CK	4	Serial clock output to D/A.
SDI	5	Serial data out to D/A.
LD1	6	Chip select 1.
LD2	7	Chip select 2.
SCL	8	Serial clock out to EEP-ROM.
SDA	9	Serial data in/out from/to EEP-ROM.
SDE	10	Data transfer control signal out to titler.
SIN	11	Serial data out to titler.
HALL SW	12	Hall amp gain control output.
SCLK	13	Serial clock out to titler.
FMSPD2	14	Focus motor speed control out 2
FMSPD1	15	Focus motor speed control out 1
EE5	16	EE/PB judge input.
HD	17	H sync signal input.
VTG	18	V sync signal input.
SLEEP	19	Operation control in/out (power on/off)
CNVss	25	Chip mode select input (D-GND)
RESET/AC	26	Reset input.
X IN	28	X'tal connecting terminal.
X OUT	29	X'tal connecting terminal.
Vss	32	To be connected D-GND.
ZOOM T	33	Zoom motor control out (TELE)
ZOOM W	34	Zoom motor control out (WIDE)
SENSE	35	Focus reference position detect input.
HI-RESO	36	Auto focus mode control input.
LED-IHQ	37	I-HQ LED ON/OFF control out.
TARRY	38	Tarry LED ON/OFF control out.
AF9	39	Auto focus transferred data in/out
AF8	40	
AF7	42	
AF6	43	
AF5	44	
AF4	45	
AF3	46	
AF2	47	
AF1	48	
AF0	49	
DTH	50	Auto focus IC mode select out.
AEN	51	Data transfer direction control out to auto focus IC.
ACK	52	Serial clock out to auto focus IC.
TITLER	53	Digital memory available model select input.
EMZ1	54	PV-M2 or M4/MS8 model select input.
FCS RST	55	Focus motor driver reset output.
CW/CCW	56	Focus moving direction select output.
ATR	57	Focus motor drive pulse trigger output.
T/W2	58	Zoom encoder (detail) input.
T/W1	59	Zoom encoder (rough) input.
WB -V	62	Colour temperature range voltage detect input.
WB -CT	63	Colour temperature voltage detect input.
IRIS LEV	64	Iris open condition detect input.
KENPA	65	CCD output voltage detect input.
IRIS-CONT 2	66	Iris control voltage output (detail).
IRIS-CONT 1	67	Iris control voltage output (rough).

PORT NAME	PIN No.	FUNCTION
DA Vref	68	D/A convertor reference voltage terminal.
AD Vref	69	A/D convertor reference voltage terminal.
A Vss	70	Analogue power supply ground.
A Vcc	71	Analogue power supply terminal.
Vcc	72	Power supply terminal.
Vss	73	Ground terminal.
CMR-BUSY	74	Transfer BUSY output to OPE. MI-COM.
CMR-CLK	75	Serial clock input from OPE. MI-COM.
CMR-DATA	76	Serial data out to OPE. MI-COM.
OPE-DATA	77	Serial data in from OPE. MI-COM.
FADE SW	78	Black/white fader select output.
SHUT	79	Shutter speed select pulse output.

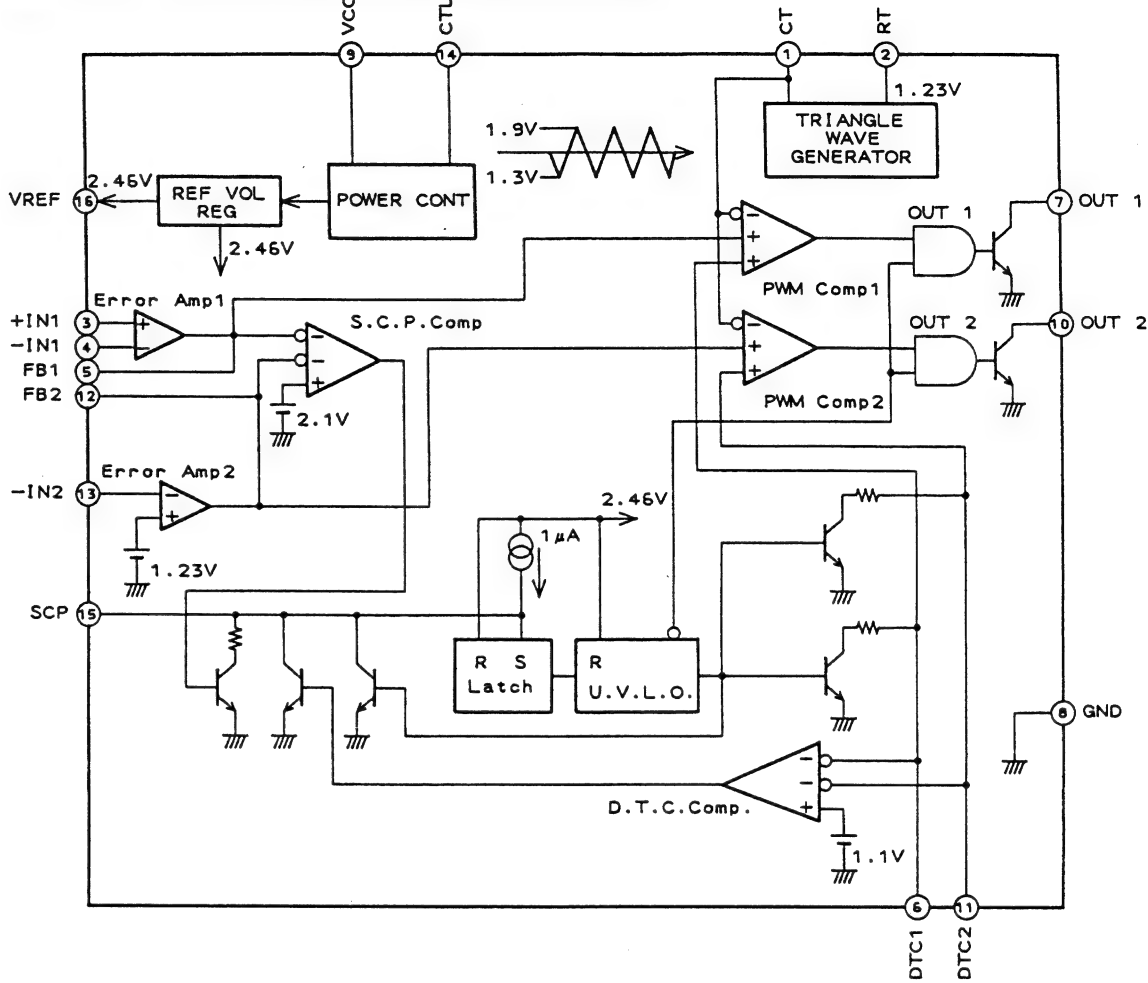
**CXD1172AM (6 BIT A/D CONVERTOR)**




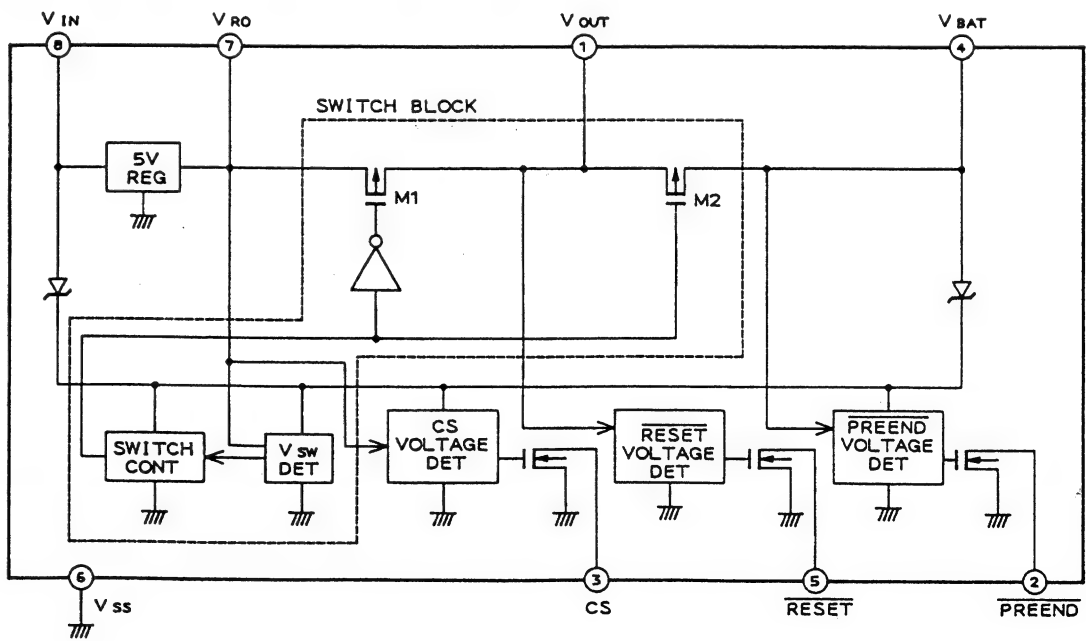
M37471M8-222 (OPERATION MI-COM)

PORT NAME	PIN No.	FUNCTION
CLKTST	3	X'tal OSC out for timer.
CMR-CLK	4	Serial clock out to camera MI-COM.
CMR-BUSY	5	BUSY input from camera MI-COM.
LI-DET	7	Back up (Lithium) battery voltage input (A/D).
SCAN7	6	Key scan outputs.
SCAN6	8	
SCAN5	9	
SCAN4	10	
SCAN3	11	
SCAN2	12	
SCAN1	13	
SCAN0	14	
Vref	15	A/D convertor reference voltage terminal.
Xin	18	X'tal connecting terminal (main clock).
Xout	19	X'tal connecting terminal (main clock).
AVss	21	Analogue power supply ground terminal.
Vss	22	Ground terminal.
Vcc	23	Power supply terminal.
Xc in	25	X'tal connecting terminal (timer clock).
Xc out	26	X'tal connecting terminal (timer clock).
RESET	28	Reset input.
IR	30	Remote control signal input.
PDOWN	32	Power supply voltage drop detect input.
CMR-DATA	33	Serial data input from camera MI-COM.
RESET/AC	35	Reset pulse output to external ICs.
AL	36	Power supply (always) control output.
SYS-CLK	37	Serial clock output to SYS-CON MI-COM.
FADER	38	Fader key input.
KEY0	39	Key scan inputs.
KEY1	40	
KEY2	41	
KEY3	42	
KEY4	43	
KEY5	46	
SLEEP	47	SLEEP output to external ICs.
WAKE-UP	48	WAKE UP output to SYS-CON MI-COM.
SYS-BUSY	49	BUSY input from SYS-CON MI-COM.
Vss	51	Ground terminal.
SYS-DATA	52	Serial data input from SYS-CON MI-COM.
STB	53	On screen display strobe output.
CLK	54	On screen display clock output.
OP-DATA	55	Serial data output to CAMERA, SYS-CON and OSD ICs.

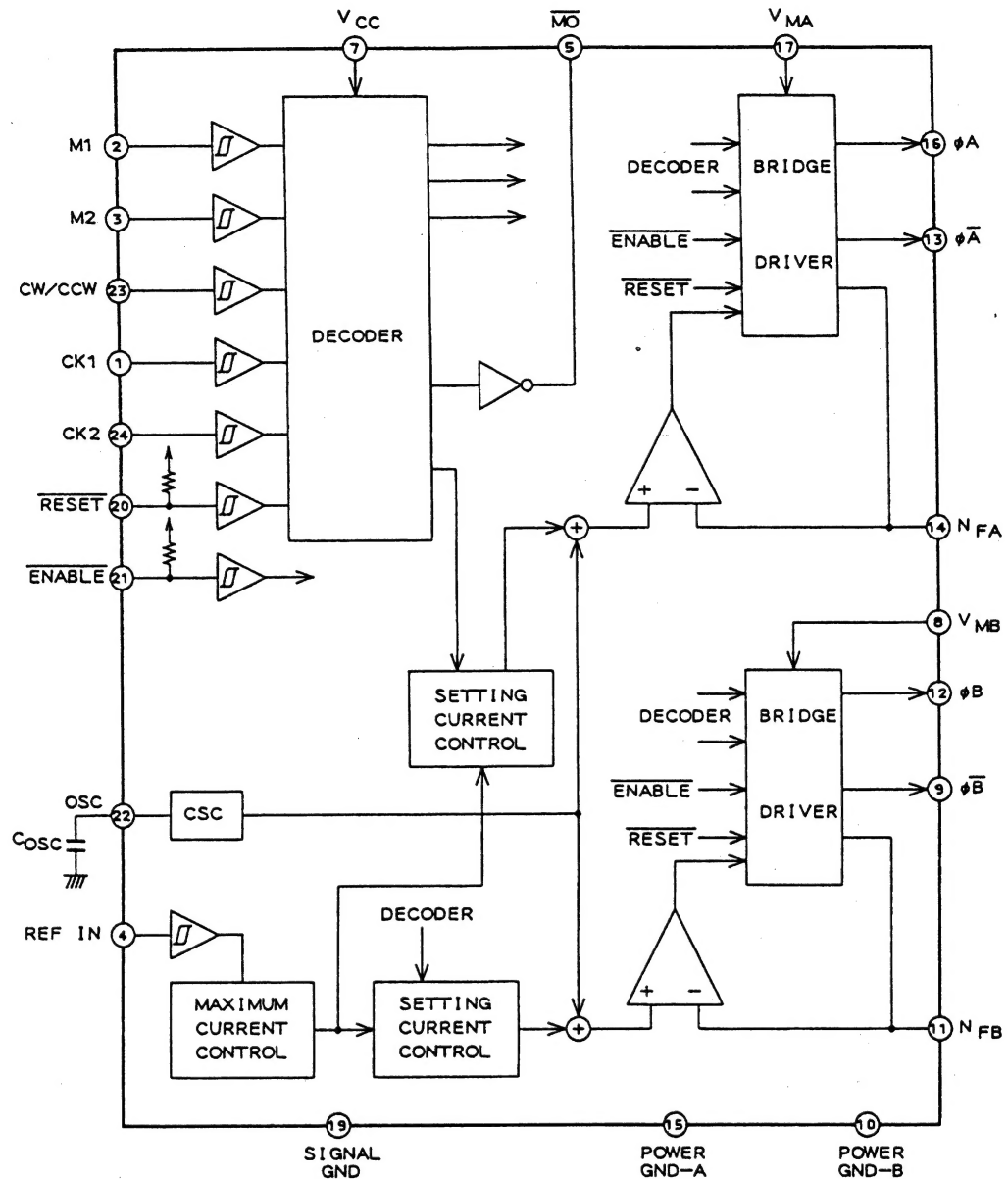
MB3778PFV (SWITCHING REGULATOR CONTROLLER)



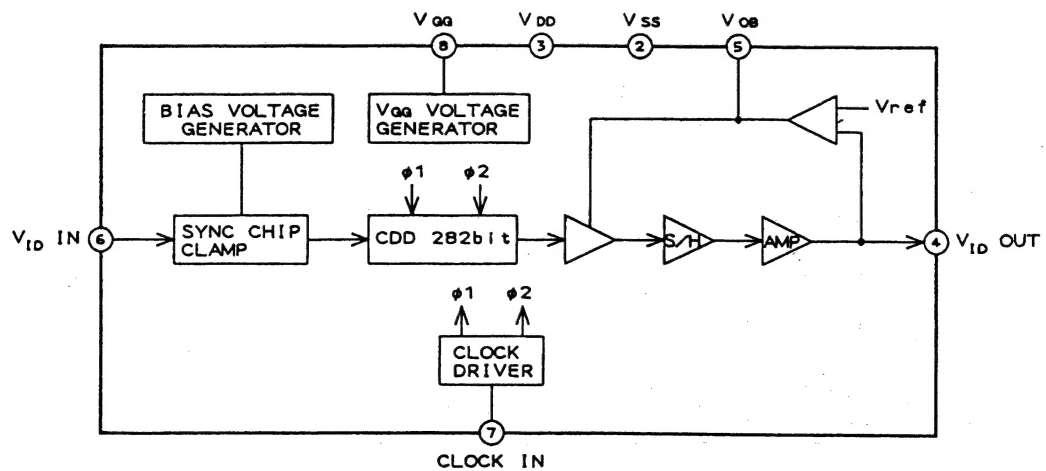
S-8420BF-T1 (BATTERY BACK-UP SELECT)



# **TB6504F-EL (STEPPING MOTOR CONTROL DRIVER)**



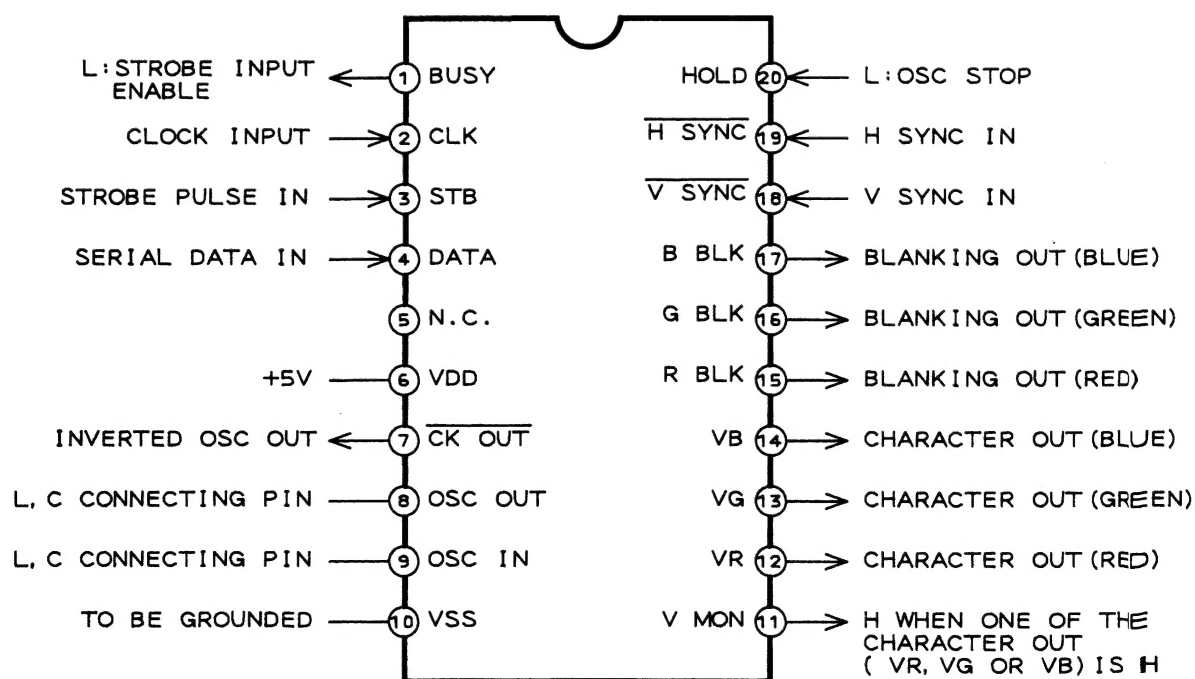
# **TL8811F (PAL CCD 1H DELAY LINE)**



PORT NAME	PIN No.	FUNCTION
DPG	1	DRUM PG pulse input.
SI	2	Serial data input from OPE. MI-COM.
SO	3	Serial data output to OPE. MI-COM.
SCK	4	Serial clock input from OPE. MI-COM.
WAKE UP	5	Start up command input.
ATF PLS	6	ATF pulse input.
SLW PLS	7	Slow pulse input.
REC. SAF	8	Tape REC enable detect.
CFG	9	CAPSTAN motor FG pulse input.
DFG	10	DRUM motor FG pulse input.
ENV. PLS	11	RF envelope detect pulse input.
C. SYNC	12	Composite sync input.
SWP	13	Switching pulse output.
SLEEP	14	Stand-by signal input.
VP	15	Quasi V sync output.
ME	16	I-HQ control output.
DPWM	17	DRUM motor servo error output.
CPWM	18	CAPSTAN motor servo error output.
AVss	19	Analogue GND.
AVref	20	Reference voltage.
ATF	21	ATF (Automatic tracking finding) signal input.
ENV. DET	22	VIDEO RF envelope input.
SS	23	Start sensor input.
ES	24	End sensor input.
SRP	25	Supply reel pulse input.
TRP	26	Take up reel pulse input.
BAT	27	Battery voltage detect input.
DEW	28	Dew sensor input.
RESET	29	Reset input from OPE. MI-COM.
Vdd	30	+ 5 V.
X2	31	Clock 2.
X1	32	Clock 1.
Vss	33	GND.
TP	34	TEST pin.
TSA	35	ATF lock window output.
JOGPLS	36	Jogging control output.
EDIT	37	Tape Dubbing control output.
SEL1	38	ATF reference select output 1
SEL2	39	ATF reference select output 2.
REC MUTE	40	Audio REC mute control.
FE	41	Flying erase ON/OFF control.
MODE B	42	Audio mode detect input B.
MODE A	43	Audio mode detect input A.
MONO	44	Audio monaural detect input.
MATRIX	45	Matrix ON/OFF control output.
MODE2	46	Audio out control output (H: L-ch, L: R-ch).
MODE1	47	Audio out control output (H: R-ch, L: L-ch).
FADE	48	Fade control output.
A.MUTE	49	Audio mute control output.
REC.S	50	REC power supply control output.
Hi8	51	Hi8 type recording control output.
SCL	52	EEP-ROM serial clock output.
SDA	53	EEP-ROM serial data output.
TUNE	54	I-HQ control output.
VCS	55	Video IC chip select output.
VSO	56	Serial data output for Video IC function control.

PORT NAME	PIN No.	FUNCTION
VCK	57	Serial clock output to video IC.
VS2	58	System set output 2 (PV-M2/M4/MS8).
VS1	59	System set output 1 (PV-M2/M4/MS8).
MP/ME	60	Tape detect output.
NORM/Hi8	61	Tape type output.
CSW	62	Cassette switch input (ejected or not).
RSW3	63	Rotary switch (mecha. position) 3 input.
RSW2	64	Rotary switch (mecha. position) 2 input.
RSW1	65	Rotary switch (mecha. position) 1 input.
RUN	66	Not used.
Vss	67	To be grounded.
EA	68	To be pulled up.
LM.F	69	Loading motor direction control output (forward).
LM.R	70	Loading motor direction control output (reverse).
PB	71	PB control output.
TRICK	72	System control output when TRICK mode.
SP	73	Tape speed detect output.
F/R	74	CAPSTAN motor direction control output.
CM STOP	75	CAPSTAN motor stop output.
DM STOP	76	DRUM motor stop output.
Vdd	77	Supply + 5V.
STILL	78	Still mode output.
SRDY	79	Serial data transfer ready output.
Vref	80	Reference voltage output.

#### μPD6451 AGT-819 (CHARACTER GENERATOR)





# ABBREVIATIONS (VIDEO)

ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
A	Audio or Analogue	MOD	MODulator
AC	Alternating Current	MRS	Motor ReverSe
ACC	Automatic Color Control	NG	Noise Gate
A/C	Audio and Control	NICAM	Near Instantaneous Compand Audio Multiplex
ADJ	ADJust (ment)	NON-LIN	NON-LINear
AFC	Automatic Frequency Control	N.T.S.C.	National Television System Committee
AFT	Automatic Fine Tuning	OSC	OSCillator
AGC	Automatic Gain Control	PAL	Phase Alternation by Line
AH	Audio Head	PB	Play Back
AL	ALways (voltage)	PCB (P.C.B)	Printed Circuit Board
ALC	Automatic Level Control	P-COM	Phase-COMparator
A-SW.P	Audio SWitching Pulse	P DOWN	Power DOWN
A-MUTE	Audio MUTE	PG	Pulse Generator
ANT	ANTenna	P.I.P	Picture In Picture
APC	Automatic Phase Control	PL, PLG	PLunger (PLunGer)
ASSY	ASSEMBly	PRG (PGM)	PRoGram (ProGraM)
BAL	BALance	PU	Pick UP (head, pulse)
B DOWN	Break DOWN	PWR	PoWeR
BGP	Burst Gate Pulse	Q	Quality factor
BLK	BLock or BLack	R	Right
BPF	Band Pass Filter	RAM	Random Access Memory
BU	Back Up (voltage)	REC	RECORD
B/W	Black and White	REF	REfERENCE
C	Chroma or Color	REF-V	REFERENCE Vertical signal
CCD	Charge Coupled Device	REG	REGulator
CCIR	Comité Consultatif International des Radio communications	REV (REVW)	REView (REvieW)
CH (ch)	CHannel (channel)	REW	REWind
CLK	CLock	RF	Radio Frequency
CM	Capstan Motor	ROM	Read Only Memory
CN	CoNnector	R.S SW	Record-Safety SWitch
COMP	COMParator	RST (RES)	ReSet (RESet)
CSW	Cassette SWitch	RVS	ReVerSe
CSYNC	Composite SYNC	S	Sensor, Shield
CTL	ConTrol	SAW	Surface Acoustic Wave
CUE	CUE	SC	SimulCast
DAC	Digital to Analog Converter	S CLK	Serial CLock
DC	Direct Current	SECAM	SÉquentiel Couleur À Mémoire
DEMOD	DEMODulator	S & H	Sample and Hold
DET	DETeTct (DETeCtor)	SLP	Super Long Play
DL	Delay Line	SP	Standard Play
DM	Drum Motor	SPD	SPeeD
DOC	Drop Out Compensator	SRP	Supply Reel Pulse
D.P.E	Drum Phase Error	SRV	SeRVo
D.PG	Drum Pulse Generator	SOW	Sync On Word
EE	Electronic to Electronic	STBY	STandBY
EF	Emitter Follower	S.VHS	Super VHS
EMPHA	EMPHAsis	SW	SWitch
ENV	ENVelope	SW'NG	SWitchiNG
EP	Extended Play	SWP	SWitching Pulse
EP ROM	Erasable Programmable ROM	SYNC	SYNChronize
EQ	EQualizer	T-AUDIO	Tuner AUDIO
FE	Full track Erase	TPZ (TRAPE)	TraPeZoid (TRAPEzoid)
FF	Flip-Flop or Fast Foward	TRK	TRackiNG
FG	Frequency Generator	TRP	Take up Reel Pulse
Fig	Figure	T/U	Take Up
FLD	FLuorescent Display	TV	TeleVision
FM	Frequency Modulation	UHF	Ultra High Frequency
Fo	resonance Frequency	UNR	UNRegulated (voltage)
FREQ	FREQuency	V	Vertical or Video
GND	GrouND	VASS	Video Address Search System
H	Horizontal	VCO	Voltage Controlled Oscillator
HP	Horizontal (sync) pulse	VH	Video Head
HPF	High Pass Filter	VHF	Very High Frequency
HQ	High Quality System	VHS	Video Home System
IC	Integrated Circuit	VIF	Video Intermediate Frequency
ID	IDentification	VISS	Video Index Search System
IDL	IDLe (Voltage)	VJ	Video Judge
IMS	Interactive Monitor System	VM	Voltage for Memory
INS	INSert	VOB	Video On Blank
INV	INVerter	VOW	Video On Word
L	Left	VP	Vertical (sync) Pulse
LED	Light Emitting Diode	VPS	Video Program System
LIM	LImitter	VPT	Video Programming by video Text
LM	Loading Motor	VT	Voltage for Tuning
LM STP	Loading Motor SToP	WHT	WHiTe
LP	Long Play	Y	Luminance
LPF	Low Pass Filter	2H	2 Hour (SP)
ME-SECAM	Middle East SECAM	4H	4 Hour (LP)
MI-COM	MicrO COMputer	6H	6 Hour (SLP/EP)
MM	Mono-stayble Multi		